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Vol. I

TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1919.

No. 12, Original

THE STATE OF NEW MEXICO, COMPLAINANT,

vs.

THE STATE OF COLORADO

IN EQUITY

FILED OCTOBER 29, 1919

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1924

No. 12, Original

THE STATE OF NEW MEXICO, COMPLAINANT,

vs.

THE STATE OF COLORADO

IN EQUITY

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[fol. 1] IN THE

SUPREME COURT OF THE UNITED STATES

THE STATE OF NEW MEXICO

vs.

THE STATE OF COLORADO

MOTION FOR LEAVE TO FILE BILL OF COMPLAINT—Filed Oct. 29, 1919

Now comes the said State of New Mexico by its special counsel employed for the purpose, and moves the court for leave to file its bill of complaint against the State of Colorado, which it submits herewith for the consideration of the court in passing upon this motion.

Octaviano A. Larrazolo, Frank W. Clancy, Special Counsel for the State of New Mexico.

[fol. 2] [File endorsement omitted.]

[fol. 3] SUPREME COURT OF THE UNITED STATES

THE STATE OF NEW MEXICO, Complainant,

vs.

THE STATE OF COLORADO

ORDER GRANTING LEAVE TO FILE BILL OF COMPLAINT—Filed October 13, 1919

On consideration of the motion for leave to file a bill of complaint herein,

It is now here ordered by the court that the said motion be, and the same is hereby, granted, and process is ordered to issue returnable on Monday, March 1st next.

Per Mr. Chief Justice White.

[fol. 4] [File endorsement omitted.]

[fol. 5] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER FOR APPEARANCE—Filed October 29, 1919

The Clerk of the court is authorized and directed to enter our appearance as Counsel for the complainant in the above entitled cause.

Octaviano A. Larrazolo, Frank W. Clancy.

[fols. 6 & 7] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

BILL OF COMPLAINT—Filed Oct. 29, 1919

To the Honorables the Chief Justice and Associate Justices of the Supreme Court of the United States:

The State of New Xexico, by Octavjano A. Larrazolo and Frank W. Clancy, Special Counsel, employed to represent the said State in the prosecution of this suit, presents this, its bill of complaint, against the State of Colorado and respectfully complaining [illegible] into this honorable court, that the ground upon which the [illegible]isdiction of the matters hereinafter set forth, depends, is that this bill of complaint sets out a controversy between the said two States of which this court has original jurisdiction.

Your orator further shows that by the legislation of Congress under which the State of Colorado was admitted into the Union of States, and by the constitution of the State of New Mexico under which the said State of New Mexico was admitted into the Union of States, the southern boundry line of the said State of Colorado and the northern boundry line of the State of New Mexico extends along the 37th parallel of north latitude from the intersection of said parallel with the 32nd meridian of longitude west from Washington in an easterly direction to the point where said parallel of latitude intersects the 103rd meridian of longitude west from Greenwich.

Your orator further shows that on the 8th day of July, 1902, Howard B. Carpenter, a United States surveyor, entered into a contract with the United States to well truly and faithfully re-survey, re-establish and re-mark the boundry line between Colorado and the [fol. 8] territories of New Mexico and Oklahoma, the same being that portion of the parallel of thirty-seven degrees of north latitude lying between the 25th and 32nd degrees of longitude west from Washington, and in pursuance of said contract and the instructions given to him by the acting Commissioner of the General Land Office, the said Carpenter did thereafter proceed to re-survey, re-establish and re-mark the said boundry line as will appear by the record and

field notes of his work, a copy of which together with a copy of said instructions from the acting commissioner of the General Land Office, so far as that record and field notes cover that portion of the 37th parallel of north latitude which constitutes the boundry between the States of Colorado and New Mexico, is hereto attached and made a part hereof, which field notes, having been examined and found correct, were approved by the commissioner of the General Land Office, as appears by his certificate to that effect attached to the said field notes hereinbefore referred to.

Your orator further shows that the line surveyed and established by the said Carpenter as shown by his field notes is the true and correct boundary line between the said two states, but that the defendant State of Colorado in disregard of that boundary line and not respecting the rights of your orator has usurped jurisdiction over a considerable amount of territory south of said line and has unlawfully levied and collected taxes upon property south of said line and through its courts has attempted to exercise both civil and criminal jurisdiction over persons and property lying south of said line; but your orator further shows that it is unable to state how far to the south of the said boundary line the State of Colorado claims jurisdiction, which acts, doings, pretenses and claims of the State of Colorado are contrary to equity and good conscience and tend to the manifest wrong, injury and oppression of your orator and of its citizens and owners of property within its boundaries.

Wherefore, being without remedy except by an original proceeding in this honorable court, where matters of this nature are, under the constitution of the United States, properly cognizable and relievable, and to the end that the State of Colorado full, true and perfect answer may make to all and signular the matters aforesaid, (but not under oath, answer under oath being hereby expressly waived), as fully and particularly as if the same were here repeated and the defendant [fol. 9] distinctly interrogated thereto, and that the said boundary line surveyed, established and marked by the said Howard B. Carpenter as set out and shown in the field notes of his survey, a copy of which is attached hereto as hereinbefore stated, be by this honorable court decreed to be the true boundary line between the States of New Mexico and the State of Colorado along the parallel of 37 degrees of north latitude, and that your orator may have such further or other relief as the nature of the case may require and to the court shall seem meet,

May it please the court to grant unto your orator such process issuing out of and under the seal of this honorable court as may be appropriate to require the said defendant, the State of Colorado to be and appear before this court, then and there to answer the said premises and to abide by and perform such order and decree as to the court shall seem meet and proper.

State of New Mexico, by Octaviano A. Larrazolo and Frank W. Clancy, Its Special Counsel.

EXHIBIT TO BILL OF COMPLAINT

Department of the Interior

General Land Office

Special Instructions for Resurvey of South Boundary of Colorado

Washington, D. C., July 7th, 1902.

Mr. Howard B. Carpenter, U. S. Surveyor, Kenwood, California.

SIR: Having entered into a contract on the 7th day of July, 1902, with the United States, to "well, truly and faithfully re-survey, re-establish and re-mark the boundary line between Colorado and the Territories of New Mexico and Oklahoma, the same being that portion of the parallel of thirty-seven degrees of North latitude lying be-
[fol. 10] tween the 25th and 32nd degrees of West longitude, for Washington, "you will be governed in the execution *in the execution* of said resurvey by the terms of your contract and the manual of instructions of 1902, wherever applicable and these special instructions.

You will begin your re-survey by proceeding to a point not less than 20 miles east of the corner established and recognized as the S. W. corner of Colorado near which point you will select a convenient and suitable site for an astronomical station and take careful observations for latitude. When full and accurate determinations are accomplished you will measure to the parallel erect an astronomical monument of the size and material prescribed in your contract. From this monument you will run a random line due west and note the falling upon the said S. W. corner, after which you will correct your line back as a true line setting mile corners as prescribed in the contract.

Thence you will proceed east along the said parallel, running your line by the usual method of setting off tangents to the parallel based upon careful meridional observations. You will verify the establishment of the parallel by observations for latitude taken upon stars north and south of the zenith. The observations for this purpose will be taken from at least eight astronomical stations along the line, the 1st at the 20-mile point as above instructed, the remainder at intervals of about 50 miles, and an equal number of astronomical monuments erected. These monuments will consist of a shaft of stone at least 6 feet in length and 12 inches in thickness, dressed on each face 6 inches to receive the inscriptions which will be as follows:

On the E. face 37 N. L. and the year.
On the N. face Colo.
On the S. face N. Mex. or Okla.
On the W. face the dist. from the Western extremity to the monument.

These astronomical monuments may stand in place of the eight-mile corners if practicable to place them.

When observations for latitude are taken at astronomical stations, and the results shows that the position of your line is in error in excess of three seconds of arc, the line should be corrected back so as to bring it within this limit.

In the event of the above number of astronomical monuments be-[fol. 11]-ing established along the line, the eighth monument will be set at a theoretical distance of 17 miles west of the eastern extremity of the line on the S. E. corner of Colorado. From this monument you will run a random line to the recognized corner to Colorado and Kansas, and if falling be less than 3 chains you will correct the line back connecting the said monument with the said corner by a straight line.

Should the closing be in excess of 3 chains, you will set a closing corner on the west boundary line of Kansas, or on the prolongation thereof, marking the same C. C. with appropriate letters, for this closing corner which will stand for the S. E. corner of Colorado, a dressed stone should be provided. It should be 5 ft. in length, 10 inches square and be inscribed, if set to the north of the original corner,

On the N. W. face Col.
On the S. W. face Okla.
On the S. E. face C. C.
On the N. E. face Kan.,

and if set to the south of the original corner, the same markings except that the letters KAN. will be omitted.

You are required to exercise the utmost care in the determination of meridians by repeated observations, and the projection therefrom of tangents to the parallel, the mean of not less than three careful and complete observations must be taken in determining such alignments. Due care must be taken in the extension of tangents, by reversion of instruments and other means in ordinary use for counteracting the growth of accumulative errors, and lines must be clear of ordinary obstruction to correct observations.

Each corner will consist of a wrought iron pipe three inches in diameter, 4 ft. long, made of ⅛ inch iron, having two flanges opposite each other at the bottom, each projecting 3 inches, the pipe to be surmounted by a cap or head of brass 3½ inches in diameter having a sleeve of about an inch in length which will admit of the insertion of the pipe, the head to be secured to the pipe by a bolt ¼ inch in diameter passing through openings in the pipe and sleeve and held in place by a nut 3/16 inches in thickness, the head of the bolt to be hammered after the nut is in place in order to prevent its slipping off, or its forcible removal. The brass cap will have letters Colo. and N. M. (or Okla. when Oklahoma is reached), cast upon its [fol. 12] surface, and between these two word the number of the mile corner is stamped. The pipe will be planted 2 feet in the ground and have the earth firmly tamped around it, so as to secure its rigidity and prevent withdrawal. A mound of earth or stone or both earth and stone will be built around the pipe 1½ feet high, and 3 ft. diameter, and pits will be dug 6 ft. distant, N. S. E. and W. 36

inches square, 18 inches deep; corners are to be further witnessed by trees when trees over 6 inches in diameter are found within 2 chains of the corner, four trees to each corner will be taken where this number can be found within limits. They will be marked with the letters Colo. when north of line, and N. M. or Okl. when south of the line, together with the number of mile corner which they witness, and the letters B. T.

Bearing objects when available within 5 chains—such as a cliff or wall—will be taken, the course and distance ascertained, and they will be marked with a cross, together with the letters Colo. N. M. as the case may be, the number of the mile and the letters B. O. In case of witness corners the same methods will be followed and the marking will have in addition the letters W. C.

In triangulation work if done by the ordinary engineer's transit repetitions of angles should be made in opposite directions in order to eliminate as far as possible, errors from clamp and axis movements. The telescope should be inverted for half the repetitions to avoid errors arising from the line of sight not being perpendicular to the horizontal axis, and from the horizontal axis not being perpendicular to the vertical axis.

Measurements will me made by either chaining or by stadia-rod when by the former, two sets of chainmen operating independently of each other will be employed.

This method will be used on level ground where long sights are obtained. Stadia measurements may be taken when mountainous and rugged ground is encountered.

Gunter's steel chain with brazen links, or a steel tape may be used in chaining. A standard chain or tape should be carried and used only for comparison with the field chains which should be tested daily.

In measuring distances by stadia the errors made in reading the rod, if it be properly graduated, will be from reading the position of the wires, and accuracy is further affected by the condition of the atmosphere.

[fol. 13] On inclined sights the distance read on the rod will be reduced to the horizontal by proper tables or diagrams, and when the atmosphere is hazy or unsteady from the effects of heat, care should be taken to shorten up the sights. The error of closure should not be greater than one in 500.

Offset angles to the parallel must be made with accuracy, and where the offset distances exceed one chain, they shall be twice measured as in the case of the tangents.

Where by reason of some peculiarity or irregularity of the surface, a mile corner or monument cannot be established in proper position, it will be erected at some suitable advanced point on the line, its inscribed distance from the true point made to correspond and in so placing it preference should be given a safe as well as conspicuous point near a pass, road, or river crossing.

Offsets and bases for triangulations will be measured with great care and the requirements of the manual.

You are required to provide yourself with suitable equipment

and means of obtaining supplies adequate to a continuous prosecution of the work, and the ordinary wants of your employes. You will associate with yourself an astronomer who has had field experience in the establishment of similar boundary lines, and who can be relied upon to furnish to you reliable and accurate data, for the proper location of points on the 37th parallel.

You will provide yourself with such astronomical and field instruments of approved construction and accuracy of adjustment as may be necessary in accurately determining meridians, parallels of latitude, tangential extensions and triangulations. This office will provide a zenith telescope for your use on this survey, which instrument will be returned to this office in good order at the determination of the field-work. In the transportation of said instruments and their various removals on the line, no pains must be spared tending to their preservation in the best possible adjustment and working order.

Examinations for adjustment of the instruments in use must be made at the commencement of each day's work, weather permitting, necessary corrections made and a record of such examinations entered in the field notes under proper dates.

Notes of position and sketches of all important topographical [fol. 14] features on and in the vicinity of the boundary, must be be taken as the survey progresses, and such conspicuous distant [illegible] on the boundary.

Where lines of public surveys have been closed upon the Darling line, you will not attempt to eradicate the closing corners, but will endeavor to find and obliterate all evidences of the mile corners re-established by subdividing and other deputy surveyors in restoring the position of the Darling line.

You will, however, leave standing the monuments now standing on the line between Colorado and Oklahoma, except those set by Darling. All evidences of corners or monuments set by Darling on south boundary of Colorado will be carefully obliterated.

Upon completion of the survey in the field, you will prepare triplicate copies of the field and astronomical notes thereof, properly indexed, headed, typewritten and securely bound, with the preliminary and final oaths.

You will also prepare in triplicate upon mounted paper, upon a scale of two miles to an inch, a neatly and clearly executed diagram or map of the survey, showing the boundary line and the topography thereon. The duplicate and triplicate may be photographs of the original, laid on the same scale and be mounted.

Very respectfully, (Signed) W. A. Richards, Acting Commissioner.

Department of the Interior

C. L. D. B.

General Land Office

Washington

Washington, D. C., Sept. 9, 1903.

Mr. H. B. Carpenter, U. S. Surveyor, Cheyenne, Wyoming.

DEAR SIR: The report of F. M. Johnson, Examiner of Surveys, of his examination of your re-survey of the south boundary of [fol. 15] Colorado under your contract, dated July 7th, 1902, has been received. This report shows that you have made a good survey of this line, that the mile corners are of the character required by the contract and properly set and witnessed.

Between the 5th and 6th astronomical stations there seems to be such a deflection from a true east line as would indicate that one of these monuments was not upon the 37th parallel of latitude.

In order to test this location, Mr. Arthur D. Kidder, an Examiner of Surveys of this office, was instructed to go to your astronomical station No. 6, and by astronomical observations determine its location as to latitude. This he has done, with the result that the monument at this station was found to be 3″ of arc north of the 37th parallel. As this is exactly the closing limit allowed upon this survey, it is surmised that you placed this monument where it is through a misunderstanding of your instructions.

It was the intention of this office that the monuments erected at astronomical stations should be placed on the 37th parallel, as determined by the observations, and that the line should close upon them with 3″ of arc.

If it is true that you placed the monument where your line fell, although that may have been within the closing limit, but not upon the parallel, it will be necessary for you to return to the field and place any such monuments so located upon the parallel. While this will leave your line within the closing limits, it is suggested that at least four mile corners, both east and west of monument No. 6, should be corrected in order to avoid the angle that would otherwise exist at this point.

If it is necessary to change the location of other monuments, please correct the line on either side of them in the same manner, the number of mile corners moved being in proportion to the distance which the monument is moved compared with monument No. 6.

Mr. Kidder will test the latitude of the monument at station No. 5, and endeavor to determine the cause of the deflection of the line between that monument and No. 6.

Mr. Johnson's report shows that the eastern terminus of your line is at a point 40.34 chs., north of the southwestern corner of Kansas as now established.

As these points should be coincident, it is important that the termi-
[fol. 16] nus of your line should be upon the 37th parallel as near as it is possible to fix it. That this may be done, Mr. Kidder has been instructed to proceed to that point and determine its latitude. If it should appear as a result of his observations that your terminal monument is not upon the 37th parallel, I have to request that you place it there and make such corrections of the line east of that point, as may be necessary. Mr. Kidder is now in the field and when this reaches you, should be at the 5th monument observing for latitude. His temporary address while there will be Trinidad. I suggest that you join him as soon as convenient. Any further instructions that may be necessary as the result of his examination will be furnished by telegraph.

I regret the necessity for your returning to the field and feel that you are being called upon to do more than your contract requires, but your work has heretofore been of such a high character and this is so good that I feel that you would rather be imposed upon to this extent than have this survey marred by these slight defects.

Very truly yours, (Signed) W. A. Richards, Commissioner.

Names and Duties of Assistants

1902

Augustus MacConnell	Assistant Astronomer.
L. B. Neighbor	Transitman.
E. Potter Lockwood	Chainman.
Walter Stone	Chainman.
Ernest G. Spinney	Chainman.
Linus Olson	Chainman.
C. D. Carpenter	Moundman.
J. W. Miller	Moundman.
Charles Windquist	Moundman.
Grover C. Bowman	Axman.
O. J. Bowman	Axman.
Wm. D. Skinner	Rodman.
J. L. Wentz	Flagman.
J. G. Myers	Flagman.
Oscar McClellan	Master of Transportation.
C. W. Hooper	Photographer.

[fol. 17]

Arthur L. Broadhead	Teamster.
Chas. H. Spencer	Chief Packer.
R. B. Maupin	Packer.
Sam Kinsey	Packer.
C. M. Holiday	Cook.
W. D. Saylor	Cook.

Names and Duties of Assistants

1903

Oscar McClellan	Transitman.
Walter Stone	Chainman.
William L. Horton	Chainman.
Clarence Holliday	Chainman.
Potter Lockwood	Chainman.
C. D. Carpenter	Moundman.
Charles Windquist	Moundman.
Linus Olson	Moundman.
Harry Weiner	Axman.
Silas S. Weiner	Axman.
E. P. Blanchard	Rodman.
Fred E. Lockwood	Flagman.
William A. Pinckard	Flagman.
Charles H. Spencer	Master of Transportation.
Arthur Spencer	Packer.
Clarence Broadhead	Cook.
E. P. Blanchard	Chainman, October, 1903.
F. E. Wright	Chainman.
Andrew Ferrara	Moundman.

Preliminary Oaths of Assistants

1902

I, Augustus MacConnell, do solemnly swear that I will well and faithfully perform the duties of Assistant Astronomer in the establishment of Latitude 37 degrees North on the Re-survey of the South Boundary of the State of Colorado.

(Signed) Augustus MacConnell, Assistant Astronomer. (Seal.)

[fol. 18] Subscribed and sworn to before me this 17th day of September, 1902. (Signed) Henry Bauer, Notary Public.

I, Lambert B. Neighbor, do solemnly swear that I will well and faithfully perform the duties of Transitman according to the instructions given me and to the best of my skill and ability in the Resurvey of the South Boundary of the State of Colorado.

(Signed) Lambert B. Neighbor, Transitman. (Seal.)

Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public.

We, Potter Lockwood, Ernest G. Spinney, Walter Stone and Linus Olson, do solemnly swear that we will well and faithfully execute the duties of chainman; that we will level the chain on even and uneven ground, and plumb the tally pins either by sticking or dropping same; that we will report the true distances to all notable objects and

the true lengths of all lines that we assist in measuring, to the best of our skill and ability, and in accordance with the instructions given us, in the re-survey of the South Boundary of the State of Colorado.

(Signed) Potter Lockwood, Chainman. Ernest G. Spinney, Chainman. Walter Stone, Chainman. Linus Olson, Chainman.

Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public. (Seal.)

We, Charles D. Carpenter, J. W. Miller and Charles Windquist do solemnly swear that we will well and truly perform the duties of moundmen in the establishment of corners, according to the instruc- [fol. 19] tions given us, to the best of our ability and skill, in the re-survey of the South Boundary of the State of Colorado.

(Signed) Charles D. Carpenter, Moundman. J. W. Miller, Moundman. Charles (his X mark) Windquist, Moundman.

Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public. (Seal.)

We, O. J. Bowman and Grover C. Bowman, do solemnly swear that we will well and truly perform the duties of axman, in the establishment of corners and other duties, according to the instructions given us, and to the best of our skill and ability, in the re-survey of the South Boundary of the State of Colorado.

(Signed) O. J. Bowman, Axman. G. C. Bowman, Axman.

Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public. (Seal.)

I, Wm. D. Skinner, do solemnly swear that I will faithfully perform the duties of Rodman according to the instructions given me, and to the best of my skill and ability, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Wm. D. Skinner, Rodman.

Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public. (Seal.)

We, J. G. Myers and J. L. Wentz, do solemnly swear that we will well and truly perform the duties of Flagman according to instructions given us, and to the best of our skill and ability, in the Resurvey of the South Boundary of the State of Colorado.

(Signed) J. G. Myers, Flagman. J. L. Wentz, Flagman. (Seal.)

[fol. 26] Subscribed and sworn to before me this 2nd day of October, 1902. (Signed) Henry Bauer, Notary Public.

Preliminary Oaths of Assistants

1903

I, Oscar McClellan, do solemnly swear that I will well and faithfully perform the duties of Transitman, according to the instructions given me and to the best of my skill and ability, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Oscar McClellan, Transitman.

Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

We, Clarence Holliday, Potter Lockwood, W. L. Horton and Walter Stone, do solemnly swear that we will well and faithfully execute the duties of chainman; that we will level the chain on even and uneven ground and plumb the talley pins either by sticking or dropping the same; that we will report the true distances to all notable objects, and the true lengths of all lines that we assist in measuring, to the best of our skill and ability, and in accordance with instructions given us, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) C. E. Holliday, Chainman. Potter Lockwood, Chainman. W. L. Horton, Chainman. Walter Stone, Chainman.

Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

We, C. D. Carpenter, Charles Windquist and Linus Olson, solemnly swear that we will well and truly perform the duties of Moundmen, [fol. 21] in the establishment of corners, according to the instructions given us to the best of our skill and ability, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) C. D. Carpenter, Moundman. Charles (his X mark) Windquist, Moundman. Linus Olson, Moundman.

Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

We, Silas S. Weimer and Harry Weimer, do solemnly swear that we will well and truly perform the duties of axman, in the establishment of corners, and other duties, according to the instructions given us, and to the best of our skill and ability, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Silas S. Weimer, Axman. Harry Weimer, Axman.

Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

I, Ed. P. Blanchard, do solemnly swear that I will faithfully perform the duties of Rodman, according to the instructions given me, and to the best of my skill and ability in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Ed. P. Blanchard, Rodman.

Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

We, Fred F. Lockwood and W. A. Pinckard, do solemnly swear that we will well and truly perform the duties of Flagmen, according to instructions given us, and to the best of our skill and ability in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Fred F. Lockwood, Flagman. W. A. Pinckard, Flagman.

[fol. 22] Subscribed and sworn to before me this 20th day of April, 1903. (Signed) J. D. Frazey, Notary Public. (Seal.)

We, Ed. P. Blanchard and F. E. Wright, do solemnly swear that we will well and faithfully execute the duties of chainmen, that we will level the chain on even and uneven ground, and plumb the tally pins, either by sticking or dropping the same, that we will report the true distances to all notable objects, and the true lengths of all lines that we assist in measuring, to the best of our skill and ability, and in accordance with the instructions given us, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Ed. P. Blanchard, Chainman. F. E. Wright, Chainman.

Subscribed and sworn to before me this 1st day of October, 1903. (Signed) Howard B. Carpenter, U. S. Surveyor and Astronomer.

I, Andrew Ferrara, do solemnly swear that I will well and truly perform the duties of moundman in the establishment of corners, according to the instructions given me, to the best of my skill and ability, in the Re-survey of the South Boundary of the State of Colorado.

(Signed) Andrew (his X mark) Ferrara, Moundman.

Subscribed and sworn to before me this 1st day of October, 1903. (Signed) Howard B. Carpenter, U. S. Surveyor and Astronomer.

Description of Instruments

Astronomical observations were made with a Wurdemann Zenith telescope, 25 ins. focal length and 2.1 ins. aperture.

This instrument was loaned me by the Department of the Interior. The line was projected with a transit made for me especially for

this line by Young and Sons of Philadelphia, Pa. It has a six inch [fol. 23] horizontal limb graduated to 30' of arc, and reading to single minutes by two double verniers placed opposite to each other. The vertical limb is five inches in diameter graduated to 30' of arc and reading by vernier to single minutes.

The instrument also has the Smith Solar attachment. The telescope is provided with stadia wires placed at the ratio of 1 in 100.

Two Philadelphia leveling rods 7 ft. long and sliding to 13 ft. graduated to feet, tenths and hundredths, and reading by vernier on target to thousandths of a foot.

Two steel tapes ¼ inch wide and 66 ft. or 1 chain in length, graduated to links.

One standard Chesterman Steel tape for comparison and adjustment of measuring tapes.

Two rod levels or plumb levels, used for guides in holding the rod vertical.

Two Aneroid Barometers, one 2¾ inch, with thermometer and one 2 inch.

Two Chronometers belonging to Mr. MacConnel, Hiatt No. 1051, Sidereal time, and Barraud No. 333 mean time.

Pursuant to instructions received from the Hon. the Commissioner of the General Land Office, Binger Hermann bearing date Washington, D. C., July 7th, 1902, I proceeded to Mancos, Colorado, perfected my organization of the astronomical corps and went to a point on the line between Colo. and N. Mex., as established by E. A. Darling in 1868, the point being near his 513th mile and at his astronomical monument No. 10, which is a block of sandstone about 10 x 15 ft. and 10 ft. high, marked Colorado on N., 1868 on E., N. Mex. on S., and 37 N. L. on W. from which another block of sandstone bears N. 20° W. 130 lks. dist. marked Colorado 1868.

I destroyed the marks on these stones. This corner on the rolling sand plain south of the Mancos River at the foot of rock cliffs about 600 ft. high.

My instructions direct me to "proceed to a point not less than 20 miles E. of the corner established and recognized as the S. W. cor. of Colorado, near which point you will select a convenient and suitable site for an astronomical station; and take careful observations for latitude." It was found to be impracticable to establish the [fol. 24] astronomical station further east than the Darling Astronomical Monument as it would place said station either in a deep canon subject to down currents of air or upon a high mesa the nearly perpendicular walls of which rise to a height of about 600 ft., making it impracticable to transport the Zenith telescope up the cliffs.

Astronomical Station No. 1 was established in open rolling country about two miles south of the Mancos River to the west and near the foot of cliffs of rock about 600 ft. high. The Darling Astronomical monument No. 10 bears S. 81° E. 11.51 chs. dist.

Set the iron pier for the Zenith telescope at this point and took observations during the nights of Sept. 21st, 22nd and 23rd, 1902.

Found the latitude of this point to be 36° 59' 53.16".

October 6th, 1902. Reached Astronomical Station No. 1 with the line party. Examined and adjusted the new Young and Son's transit, tested the tapes and stadia rods and put all tools and instruments in perfect adjustment.

At 6h 29m P. M., 1 m. t. I observe Polaris at eastern elongation and mark a point in the line thus found on a plug driven in the ground about 12 chs. N. of my station, Oct. 6th, 1902.

Oct. 7th, 1902 at 8h A. M. I lay off the azimuth of Polaris 1° 31.1' to the W. and mark a point in the true meridian thus found on a plug driven in the ground about 12 chs. N. of my station. The magnetic bearing of said true meridian is N. 14° 06' W. which gives the magnetic declination 14° 06' E.

I now run N. on this meridian 10.48 chs. to a point on the 37th parallel of N. Lat., determined by astronomical observations of Sept. 21st to 24th last.

From this point I lay off an angle from the meridian of 90° to the W. for the tangent to the parallel. In each of these observations and the subsequent turning of angles the mean of four sights was taken reversing the instrument at each sight.

Thence I run W. on a random line making the proper offsets N. to the parallel at the end of each mile, and at 16 miles and 70.85 chs. I intersect a meridian that passes through the point known as "The Four Corners," it being the S. W. cor. of the State of Colorado, the N. W. cor. of the Territory of New Mexico, the N. E. cor. [fol. 25] of the Territory of Arizona, and the S. E. cor. of the State of Utah, and being identical with the point closed upon at the terminus of the Boundary line between the State of Utah and the Territory of Arizona recently established by me. This cor. consists of a pile of stone in the center of which is the lower part of the corner stone 7 x 7 ins. firmly imbedded in the ground.

The upper part of this stone has been broken off since my visit to this corner June 29th, 1901. The fragments are still here and most of the marks are still visible upon them.

Altitude 5,500 ft.

Temperature 60°.

The bearings are as follows:

Chimney Rock on the Latra Mts. bears N. 15° 46' E. about twenty miles distant.

Darling's Peak on the Latra Mts. bears N. 36° 53' E.

Wilson's Peak (Ship Rock) bears S. 28° 42' E.

N. W. point of Sierra Carriso bears S. 54° 0' W.

Conical point on mesa bears N. 37° 20' W.

Conical point on N. end of this mesa bears N. 52° 20' E. 28.45 chs. distant.

Said cor. is 4.45 chs. S. of the intersection with my tangent and as the offset to the 37th parallel is 2.18 chs. N. of the tangent at this point it shows a falling of 6.63 chs. S. of the parallel. This answers to a correction of 40 lks. per mile in order to strike the parallel at a point 20 miles E. and gives the course of the true line N. 89° 46' E.

Oct. 9th at 6h 17m P. M., l. m. t. I observed Polaris at eastern elongation at "The Four Corners," and mark a point in this line on a stone about 15 chs. N. of my station.

Oct. 9th, 1902.

Oct. 10th, 1902. I examine the transit and find it in perfect adjustment, compare the steel tapes with the standard and find them of correct length.

At 7h 30m A. M. I lay off the azimuth of Polaris 1° 31 1′ to the W. and mark a point on the true meridian thus determined on a stone about 15 chs. N. of my station.

The magnetic bearing of the said true meridian is N. 14° 08′ W. this gives the magnetic declination 14° 08′ E.

[fol. 26] Thence I run on the

1st Mile

Altitude	Chs.	
5500 ft.		N. 89° 46′ E. on the true line. Across a flat mesa covered with black lave rock.
	18.00	East edge of mesa bears N. and S. ascend rocky volcanic ridge bears N. and S.
5600 ft.	20.88	Top of ridge about 100 ft. high, bears N. and S., descend over broken volcanic rock.
	42.00	Foot of ridge about 450 ft. below top. Enter San Juan Valley bears N. W. and S. E. thence over rolling sandy plain.
		I find that the 1st mile. cor. will fall in bend of San Juan River. Therefore, difference between measurements of 74.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 74.03 chs.
		By 2nd set 73.97 chs. the mean of which is
5000 ft.	74.00	I set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 4 ins. in the ground to bed rock for 1st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on the S. and O. 925 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable. No bearings.
		This cor. stands on the left bank of the San Juan River on a rock ledge about 25 ft. above the water, bank bears N. W. and S. E. about 10 chs. then N. E.
		Altitude 5500 ft.
		Temperature 80°.
	75.23	W. bank of San Juan River, course from N. E. to N. W. Stadia measurement across bend of river.
		The Stadia wires in the instrument are placed at ratio of 1 to 100 and by using either of them in

Altitude	Chs.	
		connection with the horizontal cross wire equals 1 to 200. Stadia rods are graduated in feet, tenths and hundredths, and reading by vernier on tar-
		[fol. 27] gets to thousandths of a foot. Rod held in a vertical position as indicated by rod level. The constant C.=focal length of lens which for this instrument is 1.15 ft. when the telescope is level and proportional when the telescope is elevated or depressed. See further explanation in report.
		Angles of elevation marked +.
		Angles of depression marked —.
		Von Geldern's table of constants used for computing horizontal distances.
		Angle 0°. Rod 11.49 double = 22.98 ft. 22.98 ft. + C. = 1.15 = 2299.13 ft. = 34.83 chs. + 75.23 chs. = 110.06 chs. — 80.00 chs. = 30.06 chs. on 2nd mile.
	80.00	Falls in river inaccessible.
		Land, mountainous and rolling.
		Soil, rocky and sandy, 4th rate.
		Vegetation, very scanty, a little greasewood.

2nd Mile

		N. 89° 46' E. on a true line.
	30.06	On left bank of San Juan River, a rocky bank about 30 ft. high bears N. E. and S. W. Thence by tape measurement over gently rolling sandy plain.
		Difference between measurements of 49.94 chs. by 2 sets of chainmen is 4 lks.; position of middle point.
		By 1st set 49.96 chs. by 2nd set 49.92 chs., the mean of which is 49.94 chs.
		49.94 chs. + 30.06 chs. =
5040 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft in rocky ground for 2nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 2 M. stamped on the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable. No bearings.
		Land rolling plain.
		Soil, sandy and rocky.
		[fol. 28] Vegetation very scanty, some greasewood.
		Altitude 5040 ft.
		Temperature, 84°.

3rd Mile

Altitude	Chs.	
		N. 89° 46' E. on true line.
	4.37	River bluff bears N. W. and S. E. about 40 ft. above river.
		Stadia measurement.
		Angle 3°—; Rod 9.76 ft. single = 976 ft.
		Constant., 9973 × 9 76 = 973.35 + C.=1.15= 974.50 ft.=14.76 chs.+4.37 chs.=19.13 chs.
	17.00	Edge of water W. side of river, 1.50 chs. wide, course N. Water very muddy about 4 ft. deep, swift current.
	19.13	Right bank of river, about 5 ft. high, bears N. and S. Enter cottonwood timber.
	24.00	Leave timber, enter sagebrush flat, bears N. and S.
	72.00	Leave sagebrush flat, bears N. W. and S. E. ascend.
	74.00	Top of spur slope S. 50 ft. high, descend.
		Difference between measurements of 65.24 chs. by 2 sets of chainmen is 21 lks. position of middle point
		By 1st set 65.25 chs.
		By 2nd set 65.23 chs., the mean of which is 65.24 chs.
		65.24 chs. + 14.76 chs.
5050 ft.	80.00	Set an iron pipe 3 ins. dia. four feet long with flanges at the bottom 2 ft. in the ground at foot or rocky slope for 3rd mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 3 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable. No bearings.
		This cor. stands at foot of steep rocky slope on N. side of rocky canon.
		Land, rolling river bottom and bluffs.
		Soil, sandy and rocky, 2nd and 4th rate.
		Vegetation, cottonwood timber and sage brush.

[fol. 29]

Alt. 5050 ft. Temp. 70°.

4th Mile

		N. 89° 46' E. on a true line.
	2.00	Bottom of dry canon, course S. W. ascend.
	22.00	Top of bluff about 150 ft. high, bears S. about 6 chs., thence S. W. and on N. side of line N. E.
	51.50	Deep narrow dry canon, course S. Coal cropping near bottom.

Altitude	Chs.	
	77.00	Top of spur slope S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen in 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs. the mean of which is
5250 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in ground for 4th mile cor. A brass cap on the top of the pipe has raised letters Colo. on the N., N. M. on the S., and 4 M. stamped in the center.
		Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Ship Rock bears S. 19° 30′ E. about 20 miles dist.
		Land, rough and broken.
		Soil, rocky and sandy, 4th rate.
		Vegetation, stunted greasewood.
		Land underlaid with at least one vein of bituminous coal.
		Alt. 5,250 ft.
		Temp. 70°.

5th Mile

		N. 89° 46″ E. on the true line.
		Descending over rolling land.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
[fol. 30]		By 1st set 80.02 chs.
		By 2nd set 79.98 chs. the mean of which is
5150 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 5th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 5M. stamped in the center.
		Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist., and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Chimney Rock on the Latra Mts. bears N. 34° 10′ E.
		Land, rolling.
		Soil, sandy, 3rd rate.
		Vegetation, scanty, grass and greasewood.
		Alt. 5,150 ft.
		Temp. 65° Oct. 10th, 1902.

Altitude	Chs.	
		Oct. 12th. Examined the adjustments of the transit and compared the steel tapes with the standard: found everything in adjustment this morning.

6th Mile

N. 89° 46' E. on a true line.
Ascend gradually over rolling land.

	10.70	Top of ridge bears N. and S. 50 lks. S. I find what I believe to be Darling's 325th mile cor. stone. A sandstone 16 x 10 x 6 ins. marked 325C. N. M. 1868. This stone was lying on top of the ground and had probably been moved from its original position. No sign of mound or pits in this vicinity. I searched the country thoroughly on both sides of my line from the four corners back to Mr. Darling's astronomical monument No. 10 near his 313th mile cor., and this is the only object I succeeded in finding bearing any of the Darling marks except the said
[fol. 31]		astronomical monument and its bearing rock. I destroyed the marks on this stone. Descend.
5150 ft.	31.60	Top of bluff W. bank of Mancos River about 30 ft. high, bears N. and S. An ancient ruin of stone circular in shape bears S. about 7.00 chs.
5075 ft.	34.50	Bed of Mancos River, 50 lks. wide, water in holes strongly alkali, course S.
	37.60	Top of E. bank of river bears N. and S. about 30 ft. high thence across the sagebrush flat.
		Difference between measurements of 80.00 chs by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs; the mean of which is
5200 ft.	80.00	Set an iron pipe 3 ins. dia., 4 ft. long with flanges at the bottom 2 ft. in the ground for 6th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 6 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. from cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Chimney Rock bears N. 30° 14' E.
		Land, rolling.
		Soil, sand and clay 3rd rate.

Altitude	Chs.	
		Vegetation, grass, sage and greasewood, some willow brush along the stream.
		Alt. 5200 ft.
		Temp. 65°.

7th Mile

		N. 89° 46' E. on a true line. Ascend.
	34.00	Foot of ridge bears N. and S. Leave Manco River Valley.
	40.76	Top of spur slope N. Descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs; the mean of which is
5210 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 7th mile cor.
[fol. 32]		A brass cap on the top of the pipe has raised letters Cole. on N., S. M. on S. and 7M stamped in the center, and raised a mound of stone 5 ft. base 2 ft. high around the post.
		No bearings. Pits impracticable.
		This cor. stands on N. W. slope of gulch.
		Land, rolling.
		Soil, sandy and stony, 3rd rate.
		Vegetation, grass and sage.
		Alt. 5210 ft.
		Temp. 60°.

8th Mile

		N. 89° 46' E. on a true line.
		Over rolling hills.
	53.50	Bottom of dry ravine, course NW, ascend.
	61.00	Brow of hill bears N. E. and S. E., descend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs. the mean of which is
5200 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft in the ground for 8th mile cor. A brass cap on the top of the pipe has raised letters Cole. on N., N. M. on S. and 8M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. cor. 6 ft. dist. Raised a a mound of earth 5 ft. base 2 ft. high around the post.

Altitude	Chs.	
		This cor. stands on S. slope of bad land hill on a coal cropping.
		Land, rolling, bad land hills.
		Soil, sandy and clay, 3rd rate.
		Vegetation, grass and stunted sage, cactus and soapweed.
		Alt. 5290 ft. Temp. 60°.

9th Mile

		N. 89° 46′ E. on a true line.
[fol. 33]		Descending.
	18.60	Enter small valley, bears N. W. and S. E.
5150 ft.	25.00	Bottom of dry gulch banks 10 ft. high, course N. W.
	54.75	Leave valley bears N. W. and S. Ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen in 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
5380 ft.	80.00	Set an iron pipe 3 ins. dia., 4 ft. long with flanges at the bottom 2 ft. in the ground for 8th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 8 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around post.
		Chimney Rock bears N. 19° 33′ E.
		Jackson's Butte bears N. 58° 25′ E.
		Land, rolling.
		Soil, sandy and clay, 3rd rate.
		Vegetation, grass and stunted sage.
		Alt. 5380 ft.
		Temp. 60°.

10th Mile

		N. 89° 46′ E. on a true line.
	2.00	Ascend high spur slope N., descend.
	6.30	Brow of bluff bears N. and S.
	23.00	Bottom of dry ravine course N., 100 ft. deep, ascend.
5350 ft.	28.66	Point of spur slope N., descend.
5250 ft.	46.00	Bottom of dry ravine, course N. W., ascend.
5350 ft	48.00	On brow of bluff bears N. W. and S. E. Fos-

Altitude	Chs	
		siliferous sandstone ledges with indications of coal underneath.
	78.00	Dry gulch course N.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
[fol. 31]		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
5250 ft	80.00	Set an iron pipe 3 ins. dia., 4 ft. long with flanges at the bottom 2 ft. in the ground for 10th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 10 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around post. This cor. stands on point of spur sloping N.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass and sage, very scanty.
		Alt. 5250 ft.
		Temp. 56°

11th Mile

		N. 89° 46' on a true line.
		Descend
	5.00	Dry gulch, course N. W.
5300 ft.	12.00	Top of ridge bears N. W. and S. E.
	65.00	Dry gulch course N. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing; the mean is
5260 ft.	80.00	Set an iron pipe 3 ins. dia., 4 ft. long with flanges at the bottom 2 ft. in the ground for 11th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 11 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around post.
		Chimney Rock bears N. 12° E.
		Jackson's Butte bears N. 52° 40' E.
		Camel-back Butte bears S. 69° 31' E.
		Land gently rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, sage and cactus.
		Alt. 5260 ft.
		Temp. 56° Oct. 11th. 1902

Altitude	Chs.	
		I test the adjustments of the transit and compare the steel tapes with the standard. Find
[fol. 35]		everything correct and in adjustment.

12th Mile

		N. 89° 46′ E. on a true line descending.
	3.00	Bottom of dry ravine, course N. W., thence up general course of same.
5230 ft.	22.00	Leave ravine comes from S. E. Ascend along S. W. slope.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
5300 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 12th mile cor. A brass cap on the top of the pipe has raised letters Colo. N., N. M., on S. and 12 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 3 ft. base 2 ft. high around the post.
		Chimney Rock bears N. 7° 34′ E.
		Jackson's Butte bears N. 48° E.
		Camel-back Butte bears S. 65° 27′ E.
		Wilson's Peak (Ship Rock) bears S. 0° 46′ W.
		Land, gently rolling.
		Soil, sand and clay 3rd rate.
		Vegetation, sage and cactus.
		Alt. 5300 ft.
		Temp. 70°.

13th Mile

		N. 89° 46′ E. on a true line.
		Over gently rolling land.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing; the mean is
5360 ft.	80.00	Set an iron pipe 2 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 13th mile
[fol. 36]		cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 13 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 3 ft. base 2 ft. high around the post.
		Mancos River about 1½ miles N.

Altitude	Chs.	
		Land, gently rolling. Soil, sand and clay, 3rd rate. Vegetation, sage, greasewood and cactus. Alt. 5360 ft. Temp. 70°.

14th Mile

		N. 89° 46' E. on a true line. Over gently rolling land. Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point. By 1st set 80.01 chs. By 2nd set 79.99 chs.; the mean of which is
5350 ft.	80.00	Set an iron pipe 2 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 14th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 14 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Land, gently rolling. Soil, sand and clay, 3rd rate. Vegetation, grass, sage, greasewood and cactus, very scanty. Some grass will grow on this land when the season is not too dry. Altitude 5350 ft. Temp. 70°.

15th Mile

		N. 89° 46' E. on a true line. Over gently rolling land.
	43.00	Wagon road from Montezuma Valley to the San
[fol. 37]		Juan bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing; the mean is
5340 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the botton 2 ft. in the ground for the 15th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 15 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Chimney Rock bears N. 5° W.

Altitude	Chs	
		Jackson's Butte bears N. 29° 20' E. Camel-back Butte bears S. 31° 20' E. Land, gently rolling. Soil, sand and clay, 3rd rate. Vegetation, very scanty greasewood. Alt. 5340 ft. Temp. 70°.

16th Mile

		N. 89° 46' E. on a true line. Over gently rolling land.
	1.00	Trail, bears N. and S.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks.; position of middle point By 1st set 80.02 chs. By 2nd set 79.98 chs.; the mean of which is
5225 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 16th mile cor A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 16 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor 6 ft. dist. and raised a mound of earth 3 ft. base 2 ft. high around the post. Land, gently rolling. Soil, sand and clay, 3rd rate. Vegetation, sage and greasewood.
[fol. 38]		Alt. 5225 ft. Temp. 70°.

October 12th, 1902

I examine the adjustments of the transit and compare the steel tapes with the standard and find all correct this morning.

17th Mile

		N. 89° 46' E. on a true line. Ascending gradually.
	1.50	Dry gulch, course N. W.
	52.00	Road from Navajo Spring (Ute Agency) to Fruitland bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point By 1st set 80.03 chs.

Azimuth Chs

By 2nd set 79.97 chs., the mean of which is
5350 ft. 80.00 Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 17th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 17 M stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
Chimney Rock bears N. 13° 03' W.
Jackson's Butte bears N. 11° 01' E.
N. W. point of high cliff bears S. 5° 24' E. about ½ mile dist.
Camel-back Butte bears S. 22° 18' W.
Land, rolling.
Soil, sand and clay, 3rd rate.
Vegetation, very scanty, greasewood and cactus.
Alt. 5350 ft.
Temp. 48°

18th Mile.

N. 89° 46' E. on a true line.
Leave valley and ascend along N. slope over sharp
[fol. 39] ridges coming from south wall of canon.
19.40 Top of sharp spur, slope N. about 300 ft. above last mile cor. South wall of canon about 5 chs. S. Bottom of canon about 15 chs. N. North wall of canon about 3/4 of a mile N.
Thence along very steep N. slope.
Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
By 1st set 80.06 chs.
By 2nd set 79.94 chs., the mean of which is
5300 ft. 80.00 Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2ft. in the ground for 18th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 18 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
Pits impracticable. This cor. stands at foot of slope in gulch, course N.
Land, rough and broken.
Soil, clay and sand, very rocky, 4th rate.
Vegetation, scanty sage and greasewood.
Alt. 5300 ft.
Temp. 60°
N. 89° 46' E. on a true line.

19th Mile

Altitude	Chs	
		Along foot of slope from S. wall of canon over dry gulches running North.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 10.05 chs.
		By 2nd set 79.97 chs.; the mean of which is
5350 ft.	80.00	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 19th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N. N. M. on S. and 19 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
[fol. 40]		This cor. stands in dry gulch, course N. Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass and sage, very scanty.
		Alt. 5350 ft.
		Temp. 70°.

20th Mile

		B. S. 89° 46' E. on a true line.
		Ascend over rolling and broken ground.
		Difference between measurements of 34.09 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 34.10 chs.
		By 2nd set 34.08 chs.; the mean of which is
5300 ft.	34.09	Stadia measurement.
		Angle, 11°; Rod 10.81 double = 21.62 ft.
		Constant. 9636 × 21.62 ft. = 2082.30 ft. + C. = 1.13 = 2084.43 ft. = 31.58 chs. + 34.09 chs. = 65.67 chs.
	50.00	Dry bed of stream, 20 lks. wide, 10 ft. deep bottom of canon, course N. W.
	55.00	Foot of rock cliffs bears N. W. and S. E.
5750 ft.	65.67	Stadia point, top of cliffs, bears N. W. and S. E. about 450 ft. high; thence over mesa enter scrub cedar and pinon timber.
		Thence by tape measurement.
		Difference between measurements of 14.33 chs. by 2 sets of chainmen is nothing; the mean is 14.33 65.67 —
5750 ft.	80.00	This being the point 20 miles E. of the S. W. cor. of the State of Colorado, I set astronomical Monument No. 1, on 37th parallel.

Altitude Chs.

A sand stone 12 x 12 ins. by 6 ft. long 3 ft. in the ground.
This monument is dressed 10 ins. down from the top on all 4 sides, said sides facing the cardinal points, and marked with letters 2 ins. square graven in the stone, on the N. Colo.; on the E. 37° N. L.; on the S. N. Mex.; on the W. 20M; 1902. Dug pits 36 x 36 x 18 ins. N. S. and W. of the monument 6ft. dist.

[fol. 41] Found it impracticable to dig E. pit owing to its place being covered by a large cedar stump. Raised a mound of earth and stone 5 ft. base 2 ft. high around the monument.
The W. Pinnacle of Ship Rock bears S. 22° 06′ W.
A cedar tree 10 ins. dia. bears N. 8° E. 189 lks. dist. Mkd. Colo., 20 M., B. T.
A cedar tree 8 ins. dia. bears S. 44° E., 39 lks. dist., marked N. M., 20 M., B. T.
A cedar tree 8 ins. dia. bears N. 68° 40′ W. 101 lks. dist. Mkd. Colo.; 20M.; B. T.
No tree suitable for bearing tree within limits in S. W. quadrant.
Land, rough and broken.
Soil, rocky and sandy, 4th rate.
Vegetation, scrub greasewood, in valley, and scrub cedar and pinon timber on mesa.
Alt. 5750 ft.
Temp. 64°.

Oct. 13th, 1902.

At the 20th mile cor., Oct. 14th, 1902, at 5h 58m P. M. i. m. t. after carefully adjusting the transit, I observe Polaris at eastern elongation and mark a point in this line on a plug driven in the ground N. of my station.

Oct. 14th, 1902.

Oct. 15th, 1902, I lay off the azimuth of Polaris 1° 31′ to the W. and mark a point in the true meridian thus found on a plug driven in the ground N. of my station.
The magnetic bearing of the meridian is N. 13° 50′ W. This gives the magnetic declination 13° 50′ E.
I now lay off an angle of 90° from the N. to the east for the tangent to the paralled. In all these observations and the subsequent turning of angles the mean of 4 sights was used with the instrument reversed at each sight.

[fol. 42]

21st Mile

Altitude	Chs.	
		East on the tangent to the parallel.
		Over broken rocky ground and through scrub timber.
	30.00	Top of ridge bears N. W. and S. E. about 50 ft. above last cor. Descend.
	50.00	Leave timber bears N. W. and S. E.
		Difference between measurements of 76.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 76.02 chs.
		By 2nd set 75.98 chs.; the mean of which is
5700 ft.	76.00	N. .73 of a link from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 4 ins. in the ground to bed rock for 21st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 20.95 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		Alt. 5700 ft.
		Temp. 80°.
		This corner was placed at this point because the point at 80 chs. fails in the canon.
	72.21	Stadia point on bluff W. of cor.
		Stadia measurement,
		Angle 5° →; Rod 6.60 ft. double = 1320 ft.
		Constant .9924 × 1320 ft. = 1309.97 ft. + C. = 1.14 = 1311.11 ft.
		1311.11 ft. = 19.86 cha. + 72.21 chs. = 92.07 chs. + 80 chs. = 12.07 chs.
	80.00	Comes on steep slope of canon wall, impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon timber.

22nd Mile

		S. 89° 59′ E. on the tangent to the parallel.
[fol. 43]		Descend over rough broken country.
	6.00	Bottom of rock canon 200 ft. deep, heads about 10 chs. N. W.
		Course S. E. about ¼ mile S. E. canon joins larger one from N. E. to S. W.
	12.07	Stadia point on rocky spur, slope S. 125 ft. high.
		Stadia measurement.

Altitude	Chs.	
		Angle 3° +; Rod 11.55 ft. double. = 2310 ft. 2310 ft. × .9973 = 2303.76 ft. + C. = 1.15 ft. = 2304.91 ft. = 34.92 chs. + 12.07 chs. = 46.99 chs.
5500 ft.	22.00	Bottom of main canon, course S. W.
	46.99	Stadia point.
		Stadia measurement.
		Angle 3° +. Rod 9.69 ft. single = 969 × .9973 = 966.38 ft. + C. = 1.15 ft. = 967.53 ft. = 14.66 chs. + 46.99 chs.
55	61.65	Stadia point.
		Stadia measurement,
		Angle 3° +: Rod + 9.66 ft. single = 966 ft. × .9973 = 963.30 + C. = 1.15 = 964.45 ft. = 14.61 chs. = 61.65 chs.
	76.26	Stadia point on point of rocks S. wall of canon.
		Tape measurement, 3.74 chs. + 76.26 chs. =
5750 ft.	80.00	N. 3 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 22nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 22M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands in brush at foot of rocky bluff on S. side of canon.
		Land, roug hand broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass, sage and willow brush, scattering scrub cedar and pinon.
[fol. 44]		Alt. 5750 ft.
		Temp. 75°.

23rd Mile

S. 89° 59′ E. on the tangent to the parallel. Following up general course of rough canon.

5600 ft	9.50	Bottom of canon, dry, course N. W.; ascend.
5700 ft.	15.39	Point of rocks slope S.
		Stadia measurement,
		Angle 3° +. Rod 11.80 ft. double = 2360 ft. × .9973 = 2353.63 + C. = 1.15 = 2354.78 ft. = 35.67 chs. + 15.39 chs. = 51.06 chs.
5600 ft.	39.00	Bottom of rocky canon comes in from N. E. joins main canon about 2 chs. S. of the line; ascend cliffs.
5800 ft.	51.06	Stadia point on top of wall of canon, altitude 5800 ft., bears N. E. and S. E. Enter timber, thence over high table land or mesa.

Altitude	Chs.	
	74.00	Leave timber bears N. and S.
		Difference between measurements of 44.33 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 44.34 chs.
		By 2nd set 44.32 chs.; the mean of which is 44.33 chs. + 35.67 chs. =
5900 ft.	80.00	N. 7 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 23rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 23 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist., and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Land, rough and broken.
		Soil, sandy and rocky, 4th rate.
		Vegetation, grass, sage and willow brush, and scrub cedar and pinon.
		Alt. 5900 ft.
		Temp. 56°.

[fol. 45] 24th Mile

		S. 89° 58' E. on the tangent to the parallel.
		Ascend over rolling rocky land.
5900 ft.	70.26	Foot of bluffs bears N. W. and S. E.; ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
5970 ft.	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 24th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 24 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		Land, rolling.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass, sage and cactus, scattering timber south of the line.
		Alt. 5970 ft.
		Temp. 50°.

Oct. 15th, 1902.

Altitude. Chs.

I examine the transit and find it in adjustment, I compare the steel tapes with the standard and find them of correct length.

25th Mile

S. 89° 57′ E. on the tangent to the parallel.
Ascend rocky slope.

13.03 Stadia point, thence by
Stadia measurement:
Angle 17° + ; Rod 10.44 ft. double = 2088 ft. × .9145 = 1909.48 ft. 1909.48 ft. + C. = 1.10 =1910.58 ft. = 28.95 chs. + 13.03 chs. =

41.98 On top of cliffs W. edge of high mesa bears N. W. and S. E. about 800 ft. high, enter scrub cedar and pinion, thence over rocky mesa.
Difference between measurements of 51.05 chs. by 2 sets of chainmen is 4 lks. position of middle point.

[fol. 46] By 1st set 51.07 chs.
By 2nd set 51.03 chs.; the mean of which is 51.05 chs. + 28.95 chs. =

6800 ft. 80.00 N. 19 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 3 ins. in the ground to bed rock for the 25th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., and N. M. on S. and 25M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
A pinion tree 10 ins. dia. bears S. 52° 50′ W. 86 lks. dist. Mkd. N. M., 25M., B. T. No other trees within limits suitable for bearing trees.
Land, rough and broken.
Soil, rocky and sandy, 4th rate.
Vegetation, some grass and sage on slope and scrub cedar and pinion on mesa.
Alt. 6800 ft.
Temp. 75°. Oct. 16th, 1902.

I examine the transit and compare the tapes with the standard, find all correct this morning.

26th Mile

Altitude	Chs.	
		S. 89° 57′ E. on the tangent to the parallel.
	6.00	Bottom of dry rocky gulch, course N. E.
	12.08	On sharp rocky spur slope N.
	40.00	Bottom of dry ravine about 400 ft. deep, course N. E. about 5 miles to Mancos Canon.
6800 ft.	61.00	Sharp narrow rocky spur, slope N.
	71.75	Stadia point on high rock spur, slope N. E.
		Stadia measurement:
		Angle 6° — ; Rod 13.90 ft. double = 2600 ft. × 9891 = 2571.66 ft. + C = 1.14 ft. = 2572.80 ft. = 38.98 chs. + 71.75 chs. = 110.73 chs. = 110.73 chs. — 80.00 chs. = 30.73 chs. on 27th mile.
[fol. 47]		As I find the point at 80.00 chs. will come in canon and is inaccessible therefore at
6850 ft.	73.00	N. 24½ lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom on bare rock for 26th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 25½ M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		Tris cor. stands on top of perpendicular wall.
		Alt. 6850 ft.
		Temp. 70°.
	80.00	In canon, inaccessible.
		Land, high mesa cut by canons.
		Soil, rocky and sandy, 4th rate.
		Timber, scrub cedar and pinon.

27th Mile

		S. 89° 56′ E. on the tangent to the parallel.
	15.00	Bottom of rocky chasm, about 500 ft. deep, course N. E.
	30.73	Stadia point on long narrow ridge bears N. and S. about 300 ft. above bottom of canon.
	60.00	Bottom of dry canon about 350 ft. deep, course N. E.; ascend.
		Difference between measurements of 49.27 chs. by 2 sets of chainmen is 1 lks. position of middle point.
		By 1st set 49.29 chs.
		By 2nd set 49.25 chs.; the mean of which is 49.27 chs.
		49.27 chs. + 30.73 chs. =

Altitude	Chs.	
	80.00	Comes on steep wall of canon; impracticable to establish the corner. Land, very rough and broken. Soil, rocky and sandy, 3rd rate. Timber, scrub cedar and pinon.

28th Mile

[fol. 48]		S. 89° 55' E. on the tangent to the parallel. Ascend rocky canon wall.
6700 ft.	1.20	N. 37 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom on bare bed rock for 27th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 27.015 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable. This cor. stands on top of wall of canon bears S. and N. E. No trees within limits suitable for bearing trees. Alt. 6700 ft. Temp. 70°. Descend through scattering scrub cedars.
	30.00	Dry gulch, course N. E.
	40.50	Top of ridge bears N. and S.; descend.
		Difference between measurements of 62.30 chs. by 2 sets of chainmen is 6 lks. position of middle point. By 1st set 62.33 chs. By 2nd set 62.27 chs.; the mean of which is
6700 ft.	62.30	Stadia point on brink of ravine bears N. and S. Stadia measurement. Angle 2° — ; Rod 10.43 double = 2086 ft. × 9988 = 20834.50 ft. + C. = 1.15 ft. = 20845.65 ft. = 31.58 chs. + 62.30 chs. = 93.88 chs. — 80 chs. = 13.88 chs. on the 29th mile.
	80.00	Comes in bottom of dry rocky canon about 200 ft. deep, course N. W. Impracticable to establish the cor. Land, rough and broken. Soil, rocky and sandy, 3rd rate. Timber, scrub cedar and pinon.

Oct. 17th, 1902.

I test the levels and collimation of transit, and compare the tapes with the standard; find all correct.

[fol. 49]

29th Mile

Altitude	Chs.	
		S. 89° 53' E. on the tangent to the parallel.
	13.88	Stadia point, tape measurement.
6500 ft.	14.00	N. 51 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom on bare bed rock for 28th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 28.175 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable. Timber too scrubby for bearing trees. Alt. 6500 ft. Temp. 70°.
	30.00	Top of ridge bears N. W. and S. E.
	53.00	Bottom of dry ravine, course N. W.
		Difference between measurements of 66.00 chs. by 2 sets of chainmen is 2 lks. position of middle point. By 1st set 66.01 chs. By 2nd set 65.99 chs.; the mean of which is 66.00 chs. + 14.00 chs.
6500 ft.	14.00	N. 51 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 29th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 29 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 3 ft. base 2 ft. high around the post. No trees within limits suitable for bearing trees. Land, rough and broken. Soil, rocky and sandy, 3rd rate. Timber, scrub cedar and pinon. Alt. 6500 ft. Temp. 75°.

30th Mile

		S. 89° 54' E. on the tangent to the parallel.
	17.00	Top of ridge bears N. and S.; descend.
6300 ft.	59.00	On top of canon wall bears N. W. and S. E. canon about 400 ft. deep and too wide to use stadia. Therefore set a flag across canon on tangent. Ran base line S. 0° 06' W. at right angles to tangent 20.00 chs. from S. end of base line flag on tangent line across canon bears N. 69° 26' E.
[fol. 50]		Angle from base line 69° 20'.

Altitude Chs.

Tan. 69° 20' × base 20 chs. = 53.02 chs. = distance across canon.
53.02 chs. + 59.60 chs. = 112.62 chs. — 80.00 chs. = 32.62 chs. on 31st mile.

80.00 Falls in bottom of rough rocky canon about 400 ft. deep.
Main canon comes from N. W., short branch comes from N. Course S. about ½ mile to Salt Canon. Impracticable to establish the corner.
Land, rough and rocky.
Soil, rocky, sand and clay, 3rd rate.
Vegetation, grass, sage, scrub cedar and pinon timber.

October 18th, 1902.

31st Mile

S. 89° 53' E. on the tangent to the parallel.

6200 ft. 32.62 Point at E. end of triangulation.
N. 82 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 12 ins. in the ground to bed rock for 30th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on the S. and 30.408 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post.
Pits impracticable.
Ute Peak bears N. 38° 20' W.
Ship Rock bears S. 41° 40' W.
No trees within limits suitable for bearing trees.
This cor. stands on wall of canon bears N. and S.

[fol. 51] Alt. 6200 ft.
Temp. 64°.

6200 ft. 49.50 On W. wall of canon, bears N. and S.
Descend over rocks.

5900 ft. 77.00 Dry bed of stream 10 lks. wide in bottom of canon, course S.

77.50 Trail, bears N. E. and S. W.
Difference between measurements of 47.38 chs. by 2 sets of chainmen is 8 lks. position of middle point.
By 1st set 47.42 chs.
By 2nd set 47.34 chs.; the mean of which is 47.38 chs.
47.38 chs. + 32.62 chs. =

5900 ft. 80.00 N. 92 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 31st mile cor.

Altitude	Chs.	
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 31 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		This cor. stands in N. branch of Salt Canon. course S. W. about ½ mile to main canon.
		No trees within limits suitable for bearing trees.
		Land, rough and broken.
		Soil, sand and clay, very rocky, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.
		Alt. 5900 ft.
		Temp. 80°.

32nd Mile

		S. 89° 53' E. on the tangent to the parallel.
		Ascend steep rocky canon wall.
	23.32	On top of canon wall about 300 ft. above corner, bears N. E. and S. W.
	32.00	Dry ravine, course N. W.
	60.00	Dry ravine, course N. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
[fol. 52]		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
6150 ft.	80.00	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 32nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 32 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limits suitable for bearing trees.
		Land, rough and broken, very rocky.
		Soil, sand and clay, 4th rate.
		Vegetation, sage, scrub cedar and pinon.
		Alt. 6150 ft.
		Temp. 70°.

Oct. 18th, 1902.

I examine the levels and line of collimation of transit, and compare the steel tapes with the standard and find everything in adjustment.

33rd Mile

Altitude	Chs.	
		S. 89° 52′ E. on the tangent to the parallel.
	50.00	Head of canon, course S. E.
	73.00	Leave timber bears N. E. and S. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
6150 ft.	80.00	N. 129 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 33rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 33 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist., Raised a mound of earth 5 ft. base 2 ft. high around the post.
[fol. 53]		No trees within limits.
		Land, rolling.
		Soil, sand and clay, 4th rate.
		Vegetation, sage, scrub cedar and pinon.
		Alt. 6150 ft.
		Temp. 80°.

34th Mile

		S. 89° 52′ E. on the tangent to the parallel.
		Over gently rolling land.
	6.00	Enter scrub cedar and pinon, timber, bears N. and S.
	72.30	Top of ridge, bears N. and S.; descend.
	78.00	Dry gulch, course S. E.; ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
6210 ft.	80.00	N. 150 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 1 ft. in the ground to bed rock for 34th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N. M. on S. and 34 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		A pinion tree 6 ins. dia. bears N. 2° 10′ E. 50 lks. dist. mkd. Colo. 34 M., B. T.
		A pinion tree 6 ins. dia. bears S. 24½° W., 63 lks. dist., marked N. M., 34 M., B. T.
		No other trees within limits suitable for bearing trees.

Altitude	Chs	
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinion.
		Alt. 6,210 ft.
		Temp. 76. Oct. 20th, 1902

35th Mile

[fol. 54]

		I examine the transit and compare the steel tapes with the standard, find all correct.
		S. 89° 51′ E. on the tanget to the parallel.
	14.20	Trail bears N. and S.
	17.52	Top of spur slope S.
		Stadia measurement.
		Angle 0° ; Rod 11.17 double = 2.234 ft. + C. = 1.15 ft. = 2.235.15 ft. = 33.86 chs. + 17.52 chs. = 51.38 chs.
6200 ft.	21.00	On W. wall of canon bears S. and N.
	40.00	Bottom of canon about 350 ft. deep, dry, course S. There is a water pocket about ¾ of a mile N in this canon.
6200 ft.	51.38	On E. wall of canon bears N. and S., thence by tape measurement.
		Difference between measurements of 46.14 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 46.16 chs.
		By 2nd set 46.12 chs., the mean of which is 46.14 chs. + 38.86 chs. =
6200 ft.	80.00	N. 172 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 35th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 35 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinion tree 8 ins. dia. bears N. 15° 20′ E. 36 lks. dist. marked Colo. 35 M., B. T.
		A pinon tree 8 ins. dia. bears S. 58° 10′ W. 88 lks dist. marked N. M., 35 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rolling and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage and cactus, scrub cedar and pinion.
		Alt. 6,200 ft.
		Tempt 80°.

[fol. 55]

36th Mile

Altitude	Chs.	
		S. 89° 30' E. on the tangent to the parallel.
		Over mesa and through scrub timber.
	75.00	Dry gulch, course N. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs., the mean of which is
6100 ft.	80.00	N. 1.96 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 36th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 36 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinion tree 10 ins. dia. bears N. 60° 30' W. 44 lks. dist. marked Colo. 36 M., B. T.
		A pinion tree 12 ins. dia. bears S. 21° W. 76 lks. dist. marked N. M. 36 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, nearly level.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, cactus, scrub cedar and pinion.
		Alt. 6,100 ft.
		Temp. 82°.

37th Mile

		S. 89° 30' E. on the tangent to the parallel.
		Over nearly level mesa, through scrub timber.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing, the mean is
6536 ft.	80.00	N. 2.21 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 1 ft. in the ground to bed rock for 37th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 37
[fol. 56]		M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		A pinion tree 10 ins. dia. bears N. 62½° E. 26 lks. dist. marked Colo. 37 M., B. T.
		A pinion tree 14 ins. diam. bears S. 21° E. 49 lks. dist. marked N. M., 37 M., B. T.
		A pinon tree 7 ins. dia. bears N. 46° 30' W. 25 lks. dist. marked Colo., 37 M., B. T.
		No trees within limits S. W. suitable for bearing trees.

Altitude	Chs.	
		Land, nearly level mesa.
		Soil, sand and clay, 2rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6,530 ft.
		Temp. 70°. Oct. 21st, 1902

I examine the transit and compare the steel tapes with the standard, find all correct.

38th Mile

		S. 89° 49' E on the tangent to the parallel.
	17.00	Dry gulch, course N. W.
6530 ft.	30.90	Top of ridge bears N. W. and S. E.
6500 ft.	41.00	On W. wall of canon, bears N. W. and S. E.; descend.
6100 ft.	60.00	Bottom of canon, dry, bed of stream 10 lks. wide, course S. E.
		The W. branch of Barker Arroyo about 400 ft. below top of wall.
9	63.00	Trail bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 14 lks. position of middle point.
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is
6100 ft.	80.00	N. 247 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 38th mile
[fol. 57]		cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 38 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands on W. side of low spur that slopes S.
		No trees suitable for bearing trees within limits.
		Land, rough and broken.
		Soil, sand clay, 3rd rate.
		Vegetation, grass, sage and cactus, scrub cedar and pinion timber.
		Alt. 6,100 ft.
		Temp. 70°.

At the 38th mile cor. at 5h 26m P. M. 1m. t., I observe Polaris at eastern elongation. Though still daylight the star is plainly visible through the transit telescope. I mark a point in this line on a plug driven in the ground N. of my station.

October 22nd, 1902.

Altitude	Chs.	
		October 23rd, at 7h. 30m A. M. I lay off the azimuth of Polaris 1° 31.1′ to the W. and mark a point in the true meridian thus found on a plug driven in the ground N. of my station. The magnetic bearing of the meridian is N. 13° 50′ W., which gives magnetic variation 13° 50′ E. I now lay off 90° from the meridian from the N. to the E. for the tangent to the parallel. In all these observations and the subsequent turning of angles the mean of four sights was used, the instrument being in perfect adjustment, and the telescope reversed at each sight. I compare the steel tapes with the standard and find them of correct length.

39th Mile

[fol. 58]		East on the tangent to the parallel. Ascend over S. slope.
6150 ft.	6.00	Top of spur slope S. Stadia measurement, Angle 8° +; Rod 12.70 double = 2,540 ft. × .9806 = 2,490.72 ft. = 2,490.72 ft. + C. = 1.14 ft. = 2,491.86 ft. = 37.75 chs. + 6.00 chs. = 43.75 chs.
6100 ft.	20.00	Bottom of dry canon, course S.; ascend.
	43.75	Stadia point, thence by tape measurement.
6500 ft.	46.00	On top of wall of canon, about 400 ft. above bottom, bears S. W. and N. E. Stadia measurement, Angle 0°, Rod 10.20 double = 2,040 ft. + C. = 1.15 ft. = 2,041.15 ft. 2,041.15 ft. = 30.92 chs. + 46.00 = 76.92 chs.
6400 ft.	52.00	Dry ravine, course S. E.; ascend.
	76.92	On rocky south slope, stadia point. Stadia measurement, Angle 5° +, Rod 10.40 ft. single = 1040 × .9924 = 1032.09 + C. = 1.14 ft. = 1,033.23 ft. = 15.65 chs. + 76.92 chs. = 92.57 chs. − 80 chs. = 12.57 chs. on 40th mile.
	80.00	Falls on rocky S. slope; impracticable to establish cor. here. Land, very rough and broken. Soil, sand and clay, 3rd rate. Vegetation, grass, sage, scrub, cedar and pinon.

40th Mile

Altitude	Chs.	
		S. 89° 59′ E. on the tangent to the parallel.
	12.57	On wall of canon, bears N. W. and S. E.
6675 ft.	13.37	N. 1 lk. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 10 ins. in the ground to bed rock for 39th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 39.167.M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
[fol. 59]		No trees within limits suitable for bearing trees. Alt. 6675 ft. Temp. 80°.
	24.65	Brow of cliffs, bears N. E. and S. E.; descend.
	36.00	Dry rocky ravine, 300 ft. deep, course S.; ascend along rocky south slope.
		Difference between measurements of 66.63 chs. by 2 sets of chainmen is 10 lks. position of middle point
		By 1st set 66.68 chs.
		By 2nd set 66.58 chs.; the mean of which is 66.63 chs.
		66.63 chs. + 13.37 chs. =
6575 ft.	80.00	N. 3 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 40th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 40 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands on rocky spur sloping S. No trees within limits large enough for bearing trees. Land, very rocky, rough and broken. Soil, sand and clay, [illegible] rate. Vegetation, grass sage and cactus, scrub cedar and pinon. Alt. 6575 ft. Temp. 70°.

41st Mile

		S. 89° 59′ E. on the tangent to the parallel. Ascend.
	2.60	Top of Spur slope S. Stadia measurement, Angle 9° +, Rod 10.62 double = 2124 ft. × 9755 = 2071.96 ft. + C. = 1.13 ft. = 2073.09 ft. = 31.42 chs. + 2.60 chs. = 34.02 chs.

Altitude	Chs.	
	15.00	Bottom of dry canon, course S. W., 100 ft. deep.
[fol. 60]		
	34.02	On wall of canon, bears N. E. and S. W., about 200 ft. above bottom.
		Ascend by tape measurement.
		Difference between measurements of 48.58 chs. by 2 sets of chainmen is 4 lks. position of middle point
		By 1st set 48.60 chs.
		By 2nd set 48.56 chs.; the mean of which is 48.58 chs.
		48.58 chs. + 31.42 chs. =
6875 ft.	80.00	N. 7 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 41st mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 41 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable
		A pinon tree 6 ins. dia. bears N. 85° 20′ E. 62 lks. dist. marked Colo., 41 M., B. T.
		A pinon tree 10 ins. dia. bears S. 17° 20′ W. 84 lks. dist. marked N. M., 41 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.
		Alt. 6875 ft.
		Temp. 58°.
		October 23rd, 1902.

42nd Mile

		S. 89° 58′ E. on the tangent to the parallel.
	.10	Dry gulch course N.; ascend.
	15.42	Top of ridge bears N. and S.; descend.
	75.00	Top of spur slope south.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point.
[fol. 61]		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is
7000 ft.	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 42nd mile cor. A brass cap on the top of the pipe has

Altitude	Chs.	
		raised letters Colo. on N., N. M. on S. and 42 M stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 6 ins. dia. bears N. 16° 40′ E 66 lks. dist. marked Colo., 42 M., B. T.
		A pinon tree 8 ins. dia., bears S. 37° 40′ W 47 lks. dist. marked N. M., 42 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rough and rocky.
		Soil, sand and clay, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 7000 ft.
		Temp. 70°.

43rd Mile

		S. 89° 57′ E. on the tangent to the parallel Ascend.
	7.32	Top of spur slope E.
		Stadia measurement.
		Angle 0°, Rod 12.84 double = 2568 ft. + C. = 1.15 ft. = 2569.15 ft. = 38.92 chs. + 7.32 chs = 46.24 chs.
	33.00	Bottom of cañon about 300 ft. deep, dry, course S. W.
	46.24	Stadia point, thence by tape measurement,
7000 ft.	49.00	Top of ridge bears N. W. and S. E.; altitude 7000 ft.
	51.53	Point of spur slope E.; descend.
	76.00	Bottom of dry ravine, course S. E. about 100 ft. deep.
		Difference between measurements of 41.08 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 41.09 chs.
[fol. 62]		By 2nd set 41.07 chs.; the mean of which is 41.08 chs. + 38.92 chs.=
	80.00	Falls on steep side of rocky gulch, impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, scrub cedar and pinon.

October 25th, 1902.

I examine the adjustments of the transit, compare the steel tapes with the standard and find all correct.

44th Mile

Altitude	Chs.	
		S. 89° 57′ E. on the tangent to the parallel.
6725 ft.	4.00	Top of spur slope S. E.
		N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 43 mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 43.05 M. stamped in the center. Raised a mound of earth 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 12 ins. dia. bears N. 29° E. 29 lks. dist. marked Colo. 43.05 M. B. T.
		A pinion tree 7 ins. dia. bears S. 68° E. 55 lks. dist. marked N. M., 43.05 M. B. T.
		A cedar tree 12 ins. dia. bears S. 15° 15′ W. 97 lks. dist. marked N. M., 43.05 M., B. T.
		A cedar tree 12 ins. dia. bears N. 78° 10′ W. 78 lks. dist. marked Colo., 43.05 M., B. T.
		Alt. 6725 ft.
		Temp. 65°.
	8.00	Dry ravine, course S. E., about 100 ft. deep; ascend.
	12.30	Top of spur, 100 ft. high, slope S. E.; descend.
	18.00	Dry ravine Course S. E., about 100 ft. deep, ascend.
	24.50	Top of spur slope S. E.; ascend.
	40.00	Dry ravine course S. E.; ascend.
	48.00	Top of spur slope nearly E.; descend.
[fol. 63]		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.: the mean of which is
6650 ft.	80.00	N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 44th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 44.80 stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 5 ins. dia. bears N. 44°, 45′ E. 35 lks. dist. marked Colo., 44 M., B. T.
		A pinion tree 12 ins. dia. bears S. 49° W. 116 lks. dist. marked N. M., 44 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rolling and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinon.

Altitude	Chs.	
		Alt. 6650 ft.
		Temp. 70°.

45th Mile

S. 89° 56' E. on the tangent to the parallel.
Descend.
Stadia measurement.
Angle 3° —, Rod 9.61 double=1922 ft. ×.9973 =1916.81 ft. + C.=1.15 ft.=1917.96 ft.=29.03 chs.

20.00 Bottom of box cañon, about 200 ft. deep, course S. E.; ascend.

29.06 Stadia point, thence by tape measurement,

3.38 On spur slope S. E., about 109 ft. above bottom canon.
Stadia measurement.
Angle 3° —, Rod 11.82 single=1182 ft. × .9973 =1178.81 ft. + C.=1.15 ft.=1179.96=17.88 chs. + 33.38 chs. = 51.26 chs.

47.60 Bottom of rocky gluch, course S. E.; ascend.

[fol. 64] 51.26 Stadia point, thence by tape measurement,

70.00 Top of spur, slope S. E.

74.00 Dry gluch, course S. E.

Difference between measurements of 33.06 chs. by 2 sets of chainmen is 4 lks. position of middle point
By 1st set 33.08 chs.
By 2nd set 33.04 chs.; the mean of which is *is* 33.06 chs. + 46.94 chs.=

6200 ft. 80.00 N. 37 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 12 ins. in the ground to bed rock for 45th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S., and 45 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post.
Pits impracticable.
A pinon tree 7 ins. dia. bears N. 37° 40' 75 lks. dist. marked Colo., 45 M., B. T.
A pinon tree 12 ins. dia. bears S. 25° 10' E. 90 lks. dist. marked N. M., 45 M., B. T.
A pinon tree 8 ins. dia. bears S. 35° 20' W. 77 lks. dist. marked N. M., 45 M., B. T.
A pinon tree 6 ins. dia. bears N. 25½° W. 110 lks. dist. marked Colo., 45 M., B. T.
Land, rolling and broken.
Soil, rocky and sandy, 3rd rate.
Vegetation, scrub cedar and pinon.

Altitude	Chs.	
		Alt. 6200 ft. Temp. 70°.
		October 26th, 1902.
		I examine the levels and collimation of transit and compare the steel tapes with the standard, find all in adjustment.
		46th Mile
		S. 89° 55′ E. on the tangent to the parallel.
		Descend through scrub timber.
	16.75	Wood road bears N. W. and S. E.
	74.00	Wood road on spur bears N. W. and S. E.
[fol. 65]		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs., the mean of which is
5910 ft.	80.00	N. 49 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 46th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 46 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 10 ins. dia. bears N. 14° 45′ W. 53 lks. dist. marked Colo., 46 M, B. T.
		A cedar tree 7 ins. dia., bears S. 11° 45′ E. 90 lks. dist. marked N. M., 46 M., B. T.
		No other trees within limits suitable for bearing trees.
		This cor. stands on edge of dry gulch, course nearly E.
		Land, rolling.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 5910 ft.
		Temp. 70°
		47th Mile
		S. 89° 55′ E. on the tangent to the parallel.
		Descend along dry gulch, leave timber, bears N. E. and S. E.

Altitude	Chs.	
	25.80	Dry gulch, course S. E.
	31.00	Foot of hill bears N. and S. E., ascend.
	54.00	Brow of bluff bears N. and S. 50 ft. above last cor.; descend
	64.70	Wagon trail bears N. E. and S. W., foot of bluff about 100 ft. high, enter La Plata Valley, bears N. E. and S. W.
	68.95	Wire fence bears N. and S., enter Dale's field
	69.85	Irrigating ditch, course S. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point
[fol. 66]		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
5850 ft.	80.00	This point comes in middle of cultivated field, liable to be destroyed, therefore I set corner by public road on next mile
		Land, rolling.
		Soil, sandy, 2nd and 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.

48th Mile

S. 89° 54' E. on the tangent to the parallel.
Across cultivated field.

	16.90	W. edge of dry bed of La Plata, 75 lks. wide, course S.
	18.00	Leave cultivated ground and enter dense willow and sage brush, bears N. and S.
	28.42	Wire fence bears N. and S.; leave field.
	28.60	Road bears N. and S. from Hesperus to Fruitland
		Difference between measurements of 30 chs. by 2 sets of chainmen is nothing, the mean is
5850 ft.	30.00	N. 67 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 47th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 47.375 M. stamped in the center. Dig pits 36 x 36 x 18 ins. N., S., E., and W. of cor. 6 ft. dist. Raised a mound of earth and stone 5 ft. base 2 ft. high around the post.
		An oak tree 8 ins. dia. bears S. 80° 09' E. 226 lks. dist. marked N. M. 47.375 M., B. T. No other bearing trees. The W. gable of Dale's new house bears S. 7° 48' E. about 20 chs. dist.
		The N. gable of Dale's old house bears S. 8° 14' W. about 15 chs. dist.

Altitude Chs.

[fol. 67] A granite stone, by the roadside bears S. 1 W. 5.80 chs. dist. This stone which is 10 x 4 x 10 ins. above ground is on the old Darling line and is marked Colo. 1868 on N. and N. Mex. on S. I destroy this cor. and retrace the Darling line W. At 59.60 chs. I find an old pine post marked Colo. on N., 284 on E., N. Mex. on S. and 1868 on W. I destroy the post, ran W. retracing Darling's 285th mile. At 80.10 chs. I find a stake in ground and nearby a tree marked in pencil "Near Darling's 285th mile cor." I find no old Darling marks. Ran W. retracing Darling's 286th mile. At 79.40 chs. find a pile of stone, but no marks of any kind. Ran W. retracing Darling's 287th mile. At 80.00 chs. failed to find any trace of Darling's 287th mile cor. and failed to find any of Darling's corners W. of this point, except the stone mentioned in these notes on my 6th mile and Darling's 10th astronomical station nearly S. of our 17th mile.

48th Mile Continued

I now return to point on tangent and ran S. 89° 54' E. on the tangent to the parallel on 48th. mile.

34.00 Irrigation ditch, course S. W. leave La Plata Valley, bears N. E. and S. W.

42.00 On top of bluff about 50 ft. high, bears N. E. and S. W.

48.60 Darling's 283rd mile cor. bears S. 5.90 chs. A standstone 8 x 4 x 10 ins. above ground marked C. on N., 283 on E., N. M. on S. and 1868 on W. I destroyed this cor.

50.00 Top of ridge, 50 ft. high, bears N. E. and S. W., descend.

68.00 Dry gulch, course S.

68.70 Dry gulch, course S. W.

[fol. 68] Difference between measurements of 50 chs. by 2 sets of chainmen is 4 lks. position of middle point.

By 1st set 50.02 chs.

By 2nd set 49.98 chs., the mean of which is 50.00 chs. + 30.00 chs.

5875 ft. 80.00 N. 92 lks. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 48th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 48 M. stamped

Altitude Chs

in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist., raised a mound of earth 5 ft. base 2 ft. high around the post.
A cedar tree 8 ins. dia. bears S. 18° E. 98 lks. dist. marked N. M. 48 M., B. T.
A cedar tree 10 ins. dia. bears S. 44½° W. 124 lks. dist. marked N. M., 48 M., B. T.
No trees on other side of line within limits.
Land, rolling.
Soil, sand and clay, 3rd rate.
Vegetation, grass and sage. Willow brush along the La Plata.
Alt. 5875 ft.
Temp. 62°.

At the 48th mile cor. at 5h 07m P. M. 1m t., Oct. 27th, 1902 after carefully adjusting transit, though still daylight, I observe Polaris at eastern elongation. The star is plainly visible through the transit telescope. I mark a point in this line on a plug driven in the ground N. of my station.
October 27th, 1902.

Oct. 28th, 1902, at 7h A. M. I lay off the azimuth of Polaris 1° 31.1′ to the W. and mark a point in the true meridian on a plug driven in the ground N. of my station. The magnetic bearing on the meridian is N. 13° 55′ W., this gives the magnetic declination 13° 55′ E.
I now lay off from the N. to the E. for the tangent to the parallel, an angle of 90° from the meridian. In all these observations and the subsequent turning of angles the mean of 4 sights was used with the telescope reversed at each sight

[fol. 69]

49th Mile

East on the tangent to the parallel.
Ascend along N. W. slope.

16.00 Enter scattering scrub timber bears N. E. and S. W.

49.00 Darling's 282nd mile cor. bears S. 6.65 chs. dist., a standstone 14 x 4 x 12 ins. above ground in a stone mound. One cedar bearing tree S. W.: I destroyed this corner.
Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point.

Altitude	Chs.	
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is
6000 ft.	80.00	N. .76 of a link from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 49th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 49 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post. No trees within limits suitable for bearing trees.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.
		Alt. 6000 ft.
		Temp. 70°.

50th Mile

		S. 89° 59' E. on the tangent to the parallel.
		Along gentle N. slope, over rolling lands, through scattering timber.
	10.00	Top of spur slope N.; descend.
	49.10	Darling's 281st mile cor., bears S. 5.67 chs. dist. A standstone 18 x 4 x 12 ins. above ground
[fol. 70]		marked N. M. on S. and 1868, on W.
		I destroyed this corner.
	60.00	Dry gulch, course S. E.
	65.00	Dry gulch, course S.; ascend.
6000 ft.	77.00	Foot of rock cliffs, bears N. E. and S. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
	80.00	Comes on steep side of cliffs; impracticable to establish the cor. at this point.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, scattering scrub cedar and pinon.

51st Mile

		S. 89° 59' E. on the tangent to the parallel.
		Ascend cliffs.
6275 ft.	4.00	N. 3 lks. from the tangent.

Altitude	Chs.	
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 6 ins. in the ground to bed rock for the 50th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 50.05 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		Alt. 6275 ft.
		Temp. 80°.
6275 ft.	10.00	Top of spur slope S.; descend.
	45.00	Coal cropping about 30 ft. thick about 3 chs. S. of the line.
5900 ft.	47.00	Dry gulch, course S. W.; ascend cliffs.
	49.00	After a careful search 6 chs. S. of line I failed to find Darling's 280th mile corner.
6100 ft.	59.00	Top of high rocky ridge. 200 ft. above gulch, bears N. E. and S. W.; descend.
[fol. 71]		Difference between measurements of 76 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 76.05 chs.
		By 2nd set 75.95 chs.; the mean of which is 76.00 chs.
		76.00 chs. + 4.00 chs. =
6000 ft.	80.00	N. 7 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 51st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 51 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 10 ins. dia. bears E. 38° E. 81 lks. dist. marked N. M., 51 M., B. T.
		A cedar tree 10 ins. dia. bears N. 48° W. 85 lks. dist. marked Colo., 51 M. B. T. No other trees within limits suitable for bearing trees.
		This cor. stands on brink of canon that bears N. and S.
		Land, rolling and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6000 ft.
		Temp. 60°.

52nd Mile

S. 89° 58' E. on the tangent to the parallel.
Descend.
Stadia measurement.

Altitude	Chs.	
		Angle 6° —. Rod 7.15 double = 1430 × .9891 = 1414.41 ft. + C. = 1.14 ft. = 1415.55 ft. = 21.45 chs.
	6.00	Bottom of canon about 150 ft. deep, course S.; ascend.
	21.45	Stadia point on spur, slope S.
		Thence by tape measurement.
	46.60	Darling's 279th mile cor. bears S. 5.72 chs. dist. A sandstone 8 x 10 x 6 ins. above ground marked C. on N., N. M. on S., 279 on E. Two [fol. 72] cedar bearing trees on S. side of line. I destroyed this cor.
5890 ft.	47.00	Dry bed of McDermott's Creek, course S. W.; about 20 chs. down bed of creek a soda spring.
		Difference between measurements of 58.55 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 58.56 chs.
		By 2nd set 58.54 chs.; the mean of which is 58.55 chs. + 21.43 chs. =
5975 ft.	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 52nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 52 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands on side of hill sloping N. W.
		A pinon tree 10 ins. dia. bears S. 45° 20′ E. 87 lks. dist. marked N. M., 52 M., B. T.
		A pinon tree 7 ins. dia. bears S. 21° 40′ W. 58 lks. dist. marked N. M., 52 M., B. T.
		A pinon tree 7 ins. dia. bears N. 43° W. 86 lks. dist. marked Colo., 52 M., B. T.
		No tree within limits N. E. suitable for bearing tree.
		Land, rolling and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage and scattering scrub cedar and pinon.
		Alt. 5975 ft.
		Temp. 50°.

October 28th, 1902

I examine the transit in all its parts and find it in adjustment, compare the steel tapes with the standard and find them of correct length.

53rd Mile

Altitude	Chs.	
		S. 89° 57′ E. on the tangent to the parallel.
[fol. 73]		Ascend.
	10.60	Top of spur slope N.; descend.
	15.00	Leave timber bears N. and S.
	47.86	Darling's 278th mile cor. bears S. 6.68 chs. A cedar post marked C. on N., 278 on E., and N. M. on S. standing in line of wire fence. Pits E. and W. of post appear to have been excavated within the last 3 and 4 years. Post may not be in its original position. Post much decayed. Marks scarcely legible. I destroyed this cor.
	50.75	Dry gulch, course N.
	76.25	Road bears N. E. and S. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
5950 ft.	80.00	N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia, 4 ft. long with flanges at the bottom 2 ft. in the ground for 53rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N. N. M. on S. and 53 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		Most eastern high peak of the La Plata Mts., bears N. 6° 40′ E. A conical peak covered with timber and capped with black lava rock just visible over low hills bears N. 45° 54′ W. about 2 miles dist.
		A S. W. salient of high mesa having profile of Indian features looking W., bears S. 22° 40′ E.
		Land, gently rolling.
		Soil, clay with some sand, 3rd rate.
		Vegetation, sage, scattering scrub cedar and pinon.
		Alt. 5950 ft.
		Temp. 70°.

54th Mile

[fol. 74]		
		S. 89° 57′ E. on the tangent to the parallel.
		Ascend over gently rolling ground.
	13.00	Irrigation ditch, now dry, course S. W. Enter scattering timber bears N. and S.
	20.00	About 6 chs. S. to cor. of wire fence that runs W. and a little E. of S.

Altitude	Chs.	
	49.10	A post supposed to be Darling's 277th mile cor. bears S. 6 chs. dist., not marked. One bearing tree each side of an E. and W. line. I destroyed this cor. There are subdivision closing corners E. and W. of this point, and not far from it which I leave standing.
	55.00	Leave timber, bears N. and S.
	60.00	Dry gulch, course N. W.
	79.00	Enter timber bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
6210 ft.	80.00	By 2nd set 79.96 chs.; the mean of which is N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 54th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N.; N. M. on S. and 54 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		A pinon tree 8 ins. dia. bears N. 57° 20′ W. 75 lks. dist. marked Colo., 54 M., B. T.
		A pinon tree 6 ins. dia. bears S. 68½° E. 65 lks. dist. marked N. M., 54 M., B. T.
		No other trees within limits suitable for bearing trees.
		Conical peak covered with timber and capped with black lava rock bears N. 60° 40′ W. about 3 miles dist.
		S. salient of high mesa profiles of Indian face looking W. bears S. 4° 10′ E.
		Land, rolling.
[fol. 75]		Soil, clay and sand, 3rd rate.
		Vegetation, sage and scattering scrub cedar and pinon.
		Alt. 6210 ft.
		Temp. 65°.

55th Mile

S. 89° 56′ E. on the tangent to the parallel. Over gently rolling land.

	18.00	Top of spur slope N. W.
	32.00	Leave timber bears N. W. and S. E.
	48.00	Darling's 276th mile cor. a post marked C. on N., 276 on E. and N. M. on S. and 1868 on W. bears S. 6.45 chs. I destroyed this cor.

Altitude	Chs.	
	52.75	Dry gulch, course N. W.
	68.65	Wagon trail bears N. E. and S. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
6250 ft.	80.00	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 55th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 55 M., stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post. A cedar tree 12 ins. dia. bears N. 34° 50′ E. 309 lks. dist. marked Colo., 55 M., B. T.
		A pinon tree 12 ins. dia. bears S. 58° 40′ W. 204 lks. dist. marked N. M., 55 M., B. T. No other trees within limits.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, sage and scrub cedar and pinon.
		Alt. 6250 ft.
		Temp. 68°.

[tol. 76] 56th Mile

		S. 89° 55′ E. on the tangent to the parallel. Over gently rolling land.
	34.00	Enter timber bears N. and S.
6250 ft.	41.50	Foot of bad land hills bears N. E. and S. W.; ascend.
	49.50	Darling's 275th mile cor. bears S. 6 chs. A cedar tree 12 ins. dia. marked Colo. on N., 275 on E., N. M. on S., 1868 on W. sides. I destroy these marks.
	77.00	Top of rock bluff bears N. W. and S. E. about 100 ft. high.
		Difference between measurements of 80 chs. by 2 sets of chainmen, is 6 lks. position of middle point
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
6125 ft.	80.00	N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 56th mile cor. A brass cap on the top of the pipe has raised

Altitude	Chs.	
		letters Colo. on N., N. M. on S. and 56 M. stamped in the center. Raised mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. A cedar tree 10 ins. dia. bears N. 63° 30′ E. 66 lks. dist. marked Colo., 56 M., B. T. A pinon tree 10 ins. dia. bears S. 65° E. 57 lks. dist. marked N. M., 56 M., B. T. No other trees within limits suitable for bearing trees. Soil, sand and clay, 3rd rate. Vegetation, sage, scrub cedar and pinon. Land, rolling. Alt. 6425 ft. Temp. 60°. October 29th, 1902.

I examine the instrument, compare the steel tapes with the standard and find all correct.

57th Mile

[fol. 77]		S. 89° 55′ E. on the tangent to the parallel. Along S. rocky slope.
6425 ft.	10.00	Top of rock ledge bears S. W. and N. W.
	12.00	Coyote Spring about 15 chs. S.
	49.25	Darling's 274th mile cor. bears S. 6.08 chs. A post marked Colo. on N., 274 on E., N. M. on S. and 1868 on W. I destroyed this cor. Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point By 1st set 80.06 chs. By 2nd set 79.94 chs.; the mean of which is
6325 ft.	80.00	N. 62 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 57th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 57 M. stamped in the center. Dug pits 36 x 36 x 48 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post. A pinon tree 8 ins. dia. bears N. 54° 40′ 55 lks. dist. marked Colo., 57 M., B. T. A pinon tree 10 ins. dia. bears S. 17° 20′ E. 60 lks. dist. marked N. M., 57 M., B. T. A pinon tree 12 ins. dia. bears N. 12° W. 82 lks. dist. marked Colo., 57 M., B. T.

Altitude	Chs.	
		A pinon tree 6 ins. dia. bears S. 43° W. 22 lks. dist. marked N. M., 57 M., B. T.
		Land, rolling and broken.
		Soil, sand, clay and alkali, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6323 ft.
		Temp. 62°.

58th Mile

		S. 89° 54′ E. on the tangent to the parallel. Ascend through timber.
	9.80	On spur slope N. W.
	48.70	Darling's 273rd mile cor. bears S. 5.55 chs. A post 4 ins. square marked Colo. on N., 273 on E., N.M. on S. and no marks on the W. I destroyed this cor.
[fol. 78]		Difference between measurements of 30 chs. by 2 sets of chainmen is 10 lks. position of middle point
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is
	80.00	Comes on rough hillside, impracticable to establish cor. at this point.
		Land mountainous.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, sage, scrub cedar and pinon.

59th Mile

		S. 89° 53′ E. on the tangent to the parallel. Ascend.
6500 ft.	8.00	N. 78 lks. from the tangent:
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 58th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 58.1 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A pinon tree 10 ins. dia., bears N. 8° 40′ E. 76 lks. dist. marked Colo., 58.1 M., B. T.
		A cedar tree 8 ins. dia. bears 56½° E. 22 lks dist. marked N. M., 58.1 M., B. T.
		A cedar tree 10 ins. dia. bears N. 65½° E. 20 lks. dist. marked Colo., 58.1 M., B. T.

Altitude	Chs.	
		No tree within limits S. W. suitable for bearing tree.
		Alt. 6500 ft.
		Temp. 70°.
		This cor. stands on sharp slope N.
	49.00	Darling's 272nd mile cor. bears S. 5.25 chs. A sandstone marked C. on N., 272 on E., N.M. on S. I destroy this cor. and marks on three bearing trees.
		Difference between measurements of 72 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 72.01 chs.
[fol. 79]		By 2nd set 71.99 chs.; the mean of which is 72.00 chs. + 8.00 =
6500 ft.	80.00	N. 92 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 59th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 59 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. No trees within limits suitable for bearing trees.
		Land, rolling and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6500 ft.
		Temp. 62°.

October 30th, 1902.

I examine the transit and find it in perfect adjustment, compare the tapes and find them of correct length.

60th Mile

		S. 89° 53' E. on the tangent to the parallel.
	29.00	Leave timber bears N. and S.
	34.00	Dry gulch, course S. about 100 ft. below last cor.
	49.76	Darling's 271st mile cor. bears S. 5 chs. A sandstone 8 x 12 x 16 ins. above ground marked 271 on E. Other marks defaced by time. I destroyed this cor.
	57.00	Dry gulch, course S. W.; ascend.
	60.00	Cave Spring in Spencer Canon, about 60.00 chs. S.

Altitude	Chs.	
	65.00	Enter timber bears N. W. and S. E.
	76.00	Top of rocky spur, slope N. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
6800 ft.	80.09	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges
[fol. 80]		at the bottom 1 ft. in the ground to bed rock for 60th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 60 M. stamped in the center. Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		A pinon tree 7 ins. dia. bears S. 37° 50′ E. 52 lks. dist. marked N. M., 60 M., B. T.
		A pinon tree 7 ins. dia. bears N. 19° W. 30 lks. dist. marked Colo., 60 M., B. T.
		Land, rolling.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, sage, cedar and pinon.
		Alt. 6800 ft.
		Temp. 50°.

61st Mile

		S. 89° 52′ E. on the tangent to the parallel.
	49.58	Darling's 270th mile cor. bears S. 5 chs. A sandstone 5 x 12 x 16 ins. above ground, marked 1868 on W. Other marks indistinct. I destroyed this cor.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point,
		By 1st set 80.06 chs.,
		By 2nd set 79.94 chs.; the mean of which is
6925 ft.	80.00	N. 129 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 61st mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 61 M. stamped in the center. Raised a mound of stone 5 ft base 2 ft. high around the post. Pits impracticable. This cor. stands on cliff about 40 ft. high, bears N. W. and S. E.
		A cedar tree 12 ins. dia. bears S. 13° 10′ E. 56 lks. dist. marked N. M., 61 M., B. T.

Altitude Chs.

[fol. 81] A cross on a sand-stone slab 3 x 6 x 7 ft. bears N. 26° 40′ W. 25 lks. dist., marked Cor

Colo.
B C
61 M.

Land, rolling and broken.
Soil, rocky and sandy, 3rd rate.
Vegetation, sage, scrub cedar and pinon.
Alt. 6925 ft.
Temp. 60°.

62nd Mile

S. 89° 52′ E. on the tangent to the parallel.
Ascend over rocks and through timber.

7000 ft. 10.00 Top of ridge bears N. W. and S. E.; descend.

25.12 Top of cliffs bears N. W. and S. E.; descend over rough broken, rocky country.

49.[illegible] After careful search I failed to find Darling's 269th mile cor.

Difference between measurements of 80 chs. by 2 sets of chainmen in 14 lks. position of middle point

By 1st set 80.07 chs.

By 2nd set 79.93 chs.; the mean of which is

6075 ft. 80.00 N. 150 lks. from the tangent,

Set temporary corner. (See page 424.)

Land, rolling and broken.
Soil, rocky and sandy, 3rd rate.
Vegetation, sage, scrub cedar and pinon.
Alt. 6075 ft.
Temp. 70°.

October 31st, 1902.

At 4h 37m A. M. l. m. t. Nov. 1st, 1902 (having carefully adjusted the transit yesterday afternoon) I observed Polaris at western elongation and mark a point in this line on a plug driven in the ground N. of my station. At 7h A. M. I lay off the azimuth of Polaris 1° 31.1′ to the east and mark a point in the true meridian thus

[fol. 82] found on a plug driven in the ground N of my station. The magnetic bearing of the meridian is N. 13° 50′ W. This gives the magnetic variation 13° 50′ E. I now lay off 90° from the meridian from the N. to the E. for the tangent to the parallel. In all these observations and the subsequent turning of angles the mean of 4

63rd Mile

Altitude	Chs.	
		sights was used with the instrument reversed at each sight.
		East on the tangent to the parallel.
	2.00	Leave timber at foot of hills, enter little valley, bears N. W. and S. E.
	7.50	Wagon trail bears N. W. and S. E.
	11.21	Stadia measurement, Angle 6° +, Rod 9.78 ft. double = 1956 ft. × .9891 = 1934.68 ft. + C. = 1.14 ft. = 1935.82 ft. = 29.33 chs. + 11.21 chs. = 40.54 chs.
	12.00	Dry bed of stream, 10 lks. wide, course S. E. Bottom of Cox's Canon.
	20.00	Dry gulch, course S.
	30.00	Enter timber, leave valley bears N. and S.; ascend.
	40.54	On E. Wall of Cox's canon about 300 ft. high bears N. and S.; ascend over broken rock. Tape measurement,
	49.00	After careful search failed to find Darling's 268th mile cor. Stadia measurement Angle 6° +, Rod 9.95 double = 1990 × .9891 = 1969.31 ft. + C. = 1.14 ft. = 1969.45 ft. = 29.84 chs. = 50.32 chs. = 80.16 chs. — 0.16 chs. =
6575 ft.	80.00	N. .76 of a lk. from the tangent. Set temporary cor. Land, rolling and broken. Soil, rocky and sandy, 3rd rate. Vegetation, grass, sage, cottonwood and scrub cedar and pinon. Alt. 6575 ft. Temp. 50°.

64th Mile

[fol. 83]

		S. 89° 59' E. on the tangent to the parallel. Ascend over rocks and through brush.
	0.52	On rock cliff bears N. W. and S. E.
	11.00	Rocky gulch near head course N. W.
	49.00	After careful search I failed to find any trace of Darling's 267th mile cor.
	72.00	Top of hill bears N. and S.
6775 ft.	76.30	Brow of river bluff bears N. W. and S. E.; altitude 6,775 ft. Descend towards Rio Las Animas. Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.

Altitude	Chs.	
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
6650 ft.	80.00	N. 3 lks. from the tangent.
		Set temporary cor.
		Land, Broken and hilly.
		Soil, sandy and gravelly, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6650 ft.
		Temp. 50°.

65th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Descend steep rocky bluff.
	5.00	Dry ravine, course N. E.
	12.00	On spur slope N. E.
6000 ft.	42.00	Foot of bluff bears N. and S.
	51.80	Darling's 266th mile cor. bears S. 8 chs., a granite stone 6 x 6 x 12 ins. above ground marked C. on N., 266 on E., N. M. on S. and 1868 on W. I destroyed this cor.
6000 ft.	64.00	Brow of bluff bears N. and S.; descend.
		Difference between measurements of 65.84 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 65.89 chs.
		By 2nd set 65.79 chs.; the mean of which is
5850 ft.	65.84	Point from which astronomical station No. 2 bears S. 10.80 chs.
[fol. 84]		The latitude of this station by astronomical observations on the nights of Sept. 27, 28th, 29th and 30th, 1902, was found to be 36° 59′ 50.50″. The point on the 37th degree of North Latitude would fall 14.55 chs. N. of the station. Our falling is 10.80 chs. + 6 lks. offset = 10.86 chs. N. of the station and 3.69 chs. S. of the true parallel, as indicated by astronomical observations. As this is inside of the limit allowed by the Hon. Commissioner, I erect temporary astronomical monument North 6 lks. from the tangent at this point and continue this line. (See page 426.)
	68.00	Foot of bluff bears N. and S. about 100 ft. high.
	70.00	Irrigating ditch, course S. E.
	70.33	Stadia measurement to top of bluff across river, Angle 11° +, Rod 8.57 double = 1714 ft. × .9636 = 1651.61 f. + C. = 1.12 ft. = 1652.73 ft. = 25.04 chs. + 70.33 chs. = 95.37 chs.—80.00 chs. = 15.37 on 66th mile.

Altitude	Chs.	
	72.50	Wagon road from Durango to Farmington bears N. and S.
	73.00	Fence bears N. and S. Enter D. Doane's door-yard.
	73.25	Doane's house about 25 lks. N.
	75.00	Log stable 10 lks. S.
		As I find that the 80 chs. point will come in the river, therefore at
5775	79.00	N. 7 lks. from the tangent.
		Set temporary cor.
	80.00	Comes in Rio Las Animas, clear water, swift current, 2 ft. deep, course S. E.
		Land, rough and broken.
		Soil, sandy and stony, 3rd rate.
		Vegetation, grass, sage, willow, cottonwood and scrub cedar and pinon.
		Alt. 5775 ft.
		Temp. 40°. November 1st, 1902.

[fol. 85]

I examine the adjustments of the transit, compare the steel tape with the standard and find everything correct.

66th Mile

S. 89° 58′ E. on the tangent to the parallel.

1.00	E. bank of Rio Las Animas, course S. E.; ascend through dense willow brush.
4.00	Foot of rock cliffs bears N. W. and S. E.; ascend.
15.37	Stadia point on top of cliffs about 400 ft. high bears N. W. and S. E. Enter scrub cedar and pinon.
	Stadia measurement.
	Angle 0°, Rod 7.31 single = 731 ft. + C. = 1.15 = 732.15 ft. = 11.09 chs. + 15.37 chs. = 26.36 chs.
26.36	Stadia point on wall of canon bears N. E. and S. W.
	Stadia measurement.
	Angle 1° +, Rod 10.80 double = 2160 ft. × .9997 = 2159.35 ft. + C. = 1.15 ft. = 2160.50 ft. = 32.73 chs. + 26.36 chs. = 59.09 chs.
42.00	Bottom of dry canon about 300 ft. deep, course S. W.
59.09	Stadia point on E. wall of canon bears N. E. and S. W.; ascend by tape measurement.
70.66	Stadia measurement.

Altitude	Chs	
		Angle 5°, Rod 11.16 single = 1116 ft. × .9924 = 1107.52 ft. + C. = 1.15 ft. = 1108.67 ft. = 16.80 chs. + 70.66 chs. = 87.46 chs.—80 chs. = 7.46 chs. on 67th mile.
	79.00	Bottom of rocky gulch, course N. W.; ascend.
	80.00	Comes in rocky gulch, impracticable to establish cor. at this point.
		Land, very rough, broken and rocky.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinon.

67th Mile

[fol. 86]		S. 89° 57′ on the tangent to the parallel.
	7.46	Stadia point. Thence by tape measurement.
6650 ft.	10.00	N. 13 lks. from the tangent.
		Set temporary corner, marked 60.125 M.
		Altitude 6650 ft.
		Temp. 48°.
	11.00	Top of spur slope N.
	21.90	Top of spur slope N.; descend.
	27.00	Bottom of rocky canon about 200 ft. deep, course N. W.; ascend.
		Difference between measurements of .70 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 70.04 chs.
		By 2nd set 69.96 chs.; the mean of which is 70.00 chs. + 10.00 chs. =
7000 ft.	80.00	N. 19 lks. from the tangent.
		Set temporary corner.
		Land, rough and broken, very rocky.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 7,000 ft.
		Temp. 40°.
		November 2nd, no line run.
		Closed for the day, November 3rd, 1902.

I carefully adjust the transit in all its parts, compare the steel tapes with the standard and find them of correct length.

68th Mile

S. 89° 57′ E. on the tangent to the parallel, over broken rocky country.

Altitude	Chs.	
	40.00	Old trail bears N. E. and S. W.
	52.00	Top of rocky ridge bears N. E. and S. W.; descend.
	60.00	Darling's 263rd mile cor. bears S. 7.10 chs. A sandstone 4 x 12 x 20 ins. above ground marked C. on N., 263 on E. and N. M. on S. I destroyed this cor.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point.
[fol. 87]		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
6910 ft.	80.00	N. 27 lks. from the tangent.
		Set temporary cor.
		Land, rolling and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6910 ft.
		Temp. 60°.

69th Mile

S. 89° 56′ E. on the tangent to the parallel.

	45.00	Dry ravine, course S.
	58.00	After careful search I failed to find Darling's 262nd mile cor.
	68.00	Dry gulch, course S.
	78.50	Bottom of dry ravine, course SW.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
6950 ft.	80.00	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 69th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 69 M. stamped in the center.
		Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist.
		Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A pinon tree 12 ins. dia. bears N. 10° 10′ E. 177 lks. dist. marked Colo. 69 M. B. T.
		A yellow pine tree 28 ins. dia. bears S. 11° 30′ W. 160 lks. dist. marked N. M. 69 M. B. T.
		No other trees within limits suitable for bearing trees

Altitude Chs.

Land, rolling and broken.
Soil, sand and clay, 3rd rate.
Vegetation, scrub cedar and pinon, scattering yellow pine, and spruce and sage brush.
[fol. 88] Alt. 6950 ft.
Temp. 50°.

70th Mile

S. 89° 55′ E. on the tangent to the parallel.
Ascend through timber and brush.
45.00 Top of ridge bears N. and S.; descend.
51.00 Bottom of broad ravine, course SE.
56.55 Darling's 261st mile cor. bears S. 6.00 chs. dist. This is a resfored corner. New cedar post properly marked. Darling's old decayed post lying beside it. May not be in original position. I destroyed this cor.
57.00 Flat spur slope S.
64.00 Bottom of dry ravine, course S.; ascend.
Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
By 1st set 80.02 chs.
By 2nd set 79.98 chs.; the mean of which is
80.00 Falls on rough W. slope. Impracticable to establish cor. at this point.
Land, rolling and broken.
Soil, sand and clay, 3rd rate.
Vegetation, yellow pine, spruce, cedar, pinon and sage brush.

November 4th, 1902.

I examine the adjustments of the trainsit, compare the steel tapes with the standard and find all correct.

71st Mile

S. 89° 55′ E. on the tangent to the parallel.
Ascend.
7025 ft. 14.00 N. 51 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 70th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 70 175 M. stamped in the center. Raised a mound of

Altitude	Chs.	
[fol. 89]		stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 10 ins. dia. bears N. 71° E. 89 lks. dist. marked Colo., 70.175 M., B. T.
		A pinon tree 6 ins. dia. bears S. 31° 40′ E. 45 lks. dist. marked N. M., 70.175 M., B. T.
		A cedar tree 10 ins. dia. bears S. 54° 40′ W. 44 lks. dist. marked N. M., 70.175 M., B. T.
		A pinon tree 7 ins. dia. bears N. 66° W. 34 lks. dist. marked Colo., 70.175 M., B. T.
		Alt. 7,025 ft.
		Temp. 48°.
		Stadia measurement,
		Angle 5° +, Rod 7.75 double = 1,550 ft. × .9924 = 1,538.22 ft. + C = 1.14 ft. = 1,539.30 ft. = 23.32 chs. + 14.00 chs. =
	37.32	Top of ridge bears N. and S. Descend by tape measurement.
	58.00	Failed to find Darling's 260th mile cor.
		Difference between measurements of 42.68 chs. by 2 sets of chainmen is nothing, the mean is 42.68 + 37.32 chs. =
7000 ft.	80.00	N. 62 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 71st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and [illegible] stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A pinon tree 8 ins. dia. bears N. 35° 45 lks. dist. marked Colo., 71 M., B. T.
		A pinon tree 12 ins. dia. bears S. 10° W. 180 lks. dist. marked N. M., 71 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass sage, scrub cedar and pinon.
		Alt. 7,000 ft.
		Tempt. 62°

[fol. 90]

72nd Mile

		S. 89° 54′ E. on the tangent to the parallel.
	1.00	Bottom of draw, drains N. E.; ascend.
7000 ft.	51.00	Top of ridge bears N. E. and S. W.; descend.
	57.00	Darling's 259th mile cor. bears S. 6.15 chs.

Altitude	Chs.	
		A rock in place 6 x 6 x 4 ft. marked 259 on E., other marks illegible.
		I destroyed the remaining marks.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
6725 ft.	80.00	N. 76 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 72nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 72 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands on gravelly spur, slope N. E.
		A cedar tree 12 ins. dia. bears N. 30° E. 37 lks. dist. marked Colo., 72 M., B. T.
		A pinon tree 10 ins. dia. bears S. 18° E. 66 lks. dist. marked N. M., 72 M., B. T.
		A cedar tree 12 ins. dia. bears S. 45° W. 13 lks. dist. marked N. M., 72 M., B. T.
		A cedar tree 12 ins. dia. bears N. 60° W. 60 lks. dist. marked Colo., 72 M., B. T.
		Land, rolling.
		Soil, sandy and gravelly, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6,725 ft.
		Temp. 26°.

November 5th, 1902.

I examine the adjustments of the transit, compare the steel tapes with the standard and find all correct.

[fol. 91]

73rd Mile

S. 89° 53′ E. on the tanget to the parallel. Descend.

24.45 Bottom of dry ravine course S. E., 100 ft. deep; ascend.

57.25 Darling's 258th mile cor. bears S. 5.88 chs. A sandstone 3 x 18 x 22 ins. above ground, in stone mound, marked C. on N., N. M. on S. I destroyed this cor.

65.00 Top of spur slope S. about 300 ft. above last cor.

70.00 Dry gulch, course S.; ascend.

Altitude	Chs.	
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
6750 ft.	80.00	N. .92 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 73rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 73 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 10 ins. dia. bears N. 24½° E. 31 lks. dist. marked Colo. 73 M., B. T.
		A cedar tree 12 ins. dia. bears S. 39° 10′ W. 13 lks. dist. marked N. M., 73 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rolling.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6,750 ft.
		Temp. 45°.

74th Mile

		S. 89° 53′ E. on the tanget to the parallel.
	12.50	Top of ridge bears N. W. and S. E. about 100 ft. above cor.; descend.
[fol. 92]	50.00	Bottom of dry ravine, course S. E. 150 ft. deep; ascend.
	57.10	Darling's 257th mile cor. bears S. 6 chs. A sandstone 10 x 10 x 13 ins. above ground marked C. on N., 257 on E., N. M. on S., and 1868 on W. I destroyed this corner.
		Difference between measurements of 64.62 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 64.64 chs.
		By 2nd set 64.60 chs.; the mean of which is
6830 ft.	64.62	On spur slope S., stadia measurement.
		Angle 4° —, Rod 12.68 single = 1,268 ft. × .9951 = 1,261.79 ft. + C. = 1.15 ft. = 1,262.94 ft. = 19.13 chs. + 64.62 chs. = 83.75. — 3.75 chs. = 80.00 chs.
	78.00	Dry ravine course S.; ascend.
6810 ft.	80.00	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 74th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 74 M. stamped

Altitude	Chs	
		in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft, base 2 ft. high around the post.
		A pinon tree 10 ins. dia. bears N. 38° E. 50 lks. dist. marked Colo., 74 M., B. T.
		A pinon tree 12 ins. dia. bears S. 42° 20′ E. 55 lks. dist. marked N. M. 74 M., B. T.
		A cedar tree 10 ins. dia. bears S. 40° 20′ W. 110 lks. dist. marked N. M. 74 M., B. T.
		No tree N. W. within limits suitable for bearing tree.
		Land, rolling and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scrub cedar and pinion.
		Alt. 6,810 ft.
		Temp. 65°.

75th Mile

[fol. 93]		S. 89° 52′ E. on the tangent to the parallel. Ascend.
	10.00	Top of spur slope S. about 100 ft. high; descend.
	44.00	Dry gulch course S.; ascend.
	54.50	Top of spur slope S. about 100 ft. high; descend.
	61.00	Darling's 256th mile cor. bears S. 6.00 chs. A sandstone 4 x 10 x 12 ins. marked 256, other marks indistinct., I destroyed this corner.
	62.00	Deserted cabin and corrals about 12 chs. S.
	67.00	Bottom of dry canon, course S. W., called Pump Canon.
6700 ft.	75.00	Dry gulch, course N. W.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs. the mean of which is
6750 ft.	80.00	N. 129 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 75th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 75 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinion tree 24 ins. dia. bears N. 12° 25′ E. 140 lks. dist. marked Colo. 75 M., B. T.
		A pinon tree 12 ins. dia. bears N. 15° W. 175 lks. dist. marked Colo., 75 M., B. T.
		No trees on other side of line within limits.
		Land, rolling and broken.

Altitude	Chs.	
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, cedar and pinon.
		Alt. 6,750 ft.
		Temp. 65°.

76th Mile

		S. 89° 52′ E. on the tangent to the parallel.
	10.00	Circular corral about 4chs. S. Foot of hill bears N. W. and S. E.; ascend.
6900 ft.	36.00	Top of spur about 150 ft. above last cor., slope S., thence along steep rocky S. slope.
[fol. 94]		Difference between measurements of 52.24 chs. by ~~a set~~ of chainmen is 6 lks. position of middle point.
		By 1st set 52.27 chs.
		By 2nd set 52.21 chs.; the mean of which is
6900 ft.	52.24	On rocky spur slope S.
		Stadia measurement.
		Angle 5° +. Rod 8.23 double = 1646 × .9924 = 1633.49 + C. = 1.14 ft. = 1,634.63 ft. = 24.76 chs. + 52.24 chs. = 77.00 chs.
	70.00	Bottom of dry canon 150 ft. deep, course S. W. Trail bears N. E. and S. W.
	77.00	Stadia point on E. wall of canon bears N. E. and S. W.
		Tape measurement.
6940 ft.	80.00	N. 150 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 76th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 76 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinion tree 8 ins. dia. bears N. 23½° E. 50 lks. dist. marked Colo., 76 M., B. T.
		A pinion tree 10 ins. dia. bears S. 44° 40′ E. 64 lks. dist. marked N. M., 76 M., B. T.
		A pinion tree 6 ins. dia. bears S. 57° 25′ W. 24 lks. dist. marked N. M., 76 M., B. T.
		A cedar tree 12 ins. dia. bears N. 58° W. 35 lks. dist. marked Colo., 76 M., B. T.
		Land, rough and broken.
		Soil, rocky and sandy; 3rd rate.
		Vegetation, cedar and pinion.
		Alt. 6,940 ft.
		Temp. 34°.

November 6th, 1902.

I examine the adjustments of the transit and compare the steel tapes with the standard; find all correct and in adjustment.

[fol. 95]

77th Mile

Altitude	Chs.	
		S. 89° 51′ E. on the tangent to the parallel. Ascend.
7000 ft.	18.00	Top of high ridge bears N. W. and S. E.; descend.
	50.00	Bottom of deep dry ravine, course S. E. 200 ft. deep; ascend along steep brushy N. slope.
	60.00	Top of spur slope N. about 100 ft. above bottom of ravine.
		Difference between measurement of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
6800 ft.	80.00	Falls in deep rocky dry ravine, course N. W. Impracticable to establish the cor. at this point Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, scrub, cedar and pinon.

78th Mile

		S. 89° 50′ E. on the tangent to the parallel. Ascend steep bluff.
6910 ft.	10.00	N. 175 lks. from the tangent.
		Set an iron pipe 3 ins. dia: 4 ft. long with flanges at the bottom 2 ft. in the ground for 77th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 77.125 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 14 ins. dia. bears N. 19° E. 15 lks. dist. marked Colo. 77.125 M., B. T.
		A cedar tree 8 ins. dia. bears S. 77° 45′ E. 45 lks. dist. marked N. M., 77.125 M., B. T.
		A cedar tree 10 ins. dia. bears S. 13½° W. 42 lks. dist. marked N. M., 77.125 M., B. T.
		A cedar tree 14 ins. dia. bears N. 30° 40′ W. 35 lks. dist. marked Colo., 77.125 M., B. T.
7100 ft.	20.00	Top of spur slope N.; descend along N. slope.

Altitude	Chs.	
	40.00	Top of spur slope N.; descend.
[fol. 96]		Difference between measurements of 70 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 70.03 chs.
		By 2nd set 69.97 chs.; the mean of which is 70.00 + 10.00 chs. =
7000 ft.	80.00	N. 196 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 78th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 78 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 12 ins. dia. bears N. 15° E. 43 lks. dist. marked Colo., 78 M., B. T.
		A pinon tree 10 ins. dia. bears S. 75° W. 42 lks. dist. marked N. M., 78 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 7000 ft.
		Temp. 65°.

79th Mile

		S. 89° 50′ E. on the tangent to the parallel; descend along N. slope.
	59.50	A standstone 14 x 12 x 8 ins. above ground bears S. 7.00 chs. dist. marked C. C., Col. on N., R. 7 on E., T. 32 N., N. M. on S., and R. 8 on W. faces. I leave this cor. as I find it. After careful search both E. and W. of this stone, I failed to find any cor. bearing the Darling marks.
	62.00	Top of spur slope N.; descend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
[fol. 97]		By 1st set 80.02 chs.
		By 2nd set 79.98 chs., the mean of which is
6825 ft.	80.00	N. 221 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 79th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. an 79 M.

Altitude	Chs.	
		stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high, around the post. Pits impracticable.
		A cedar tree 6 ins. dia. bears S. 35° E. 19 lks. dist. marked N. M., 79 M., B. T.
		A pinon tree 10 ins. dia. bears N. 10° W. 16 lks. dist. marked Cob., 79 M., B. T.
		No other trees within limits suitable for bearing trees.
		This cor. stands on E. side of low spur slope N.
		Land, rolling.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scrub cedar and pinion.
		Alt. 6825 ft.
		Temp. 55°.
		November 7th. 1902

80th Mile

		S. 89° 49′ E. on the tangent to the parallel. Descend.
	1.00	Dry [illegible]ch course N.; ascend.
	4.00	Top of spur slope N.; descend.
	24.30	Top of river bluff, bears N. and S.; descend.
	28.00	Leave timber bears N. and S., enter sage brush.
6160 ft.	37.00	Foot of bluff about 100 ft. high, bears N. and S., thence across sage flat.
6150 ft.	50.00	Top 2nd bluff bears N. W. and S. E. According to Darling's field notes his 251st mile cor. should stand on the brow of this bluff. After careful search I failed to find any trace of it.
		Descend.
6075 ft.	52.00	Foot of rocky bluff about 75 ft. high, bears N. and S.
		Enter meadow on river bottom.
6075 ft.	61.50	W. bank of Las Pinos River, course S. about 2 chs. then W. to foot of bluff, then S.
[fol. 98]		Stadia measurement across stream.
	62.85	E. bank of river, 3 ft. high, course S. about 5 chs. then W. about parallel to opposite bank, clear water about 2 ft. deep; enter willow and cottonwood brush.
	65.00	Leave brush, enter meadow; Rodriguez's field bears N. and S.
	68.80	Wire fence bears N. and S. Rodriguez's house about 4 chs. S. W.
	69.25	Center of road bears N. and S. from Ignacio to the San Juan River settlements

Altitude	Chs.	
		La Boca station on the D. & R. G. W., R. R. about ½ mile N., La Boca P. O. Mexican settlement, about ½ dozen adobe houses about 10 chs. S.; ascend.
	69.75	Irrigation ditch, course S.
	72.00	Top of bluff about 75 ft. high bears N. and S.
	73.80	Wagon road bears N. E. and S. W.
		Difference between measurements of 78.65 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 78.67 chs.
		By 2nd set 78.63 chs.; the mean of which is 78.65 chs. + 1.35 chs. (Distance across the river) =
6130 ft.	80.00	N. 247 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 80th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 80 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		E. edge of rocky hill bears N. 39° E. about 1 mile dist.
		Center of round peak bears S. 84° 56′ E. about 2 miles distant.
		A conical peak covered with timber bears S. 9° E. about 1 mile distant.
	[fol. 99]	N. edge of partly timbered gray peak bears N. 79° 50′ W. about 2 miles distant.
		This cor. stands on first bench above the river at head of little draw that drains S.
		Land, broken, valley and mesa.
		Soil, rocky, clay and sand, 3rd rate.
		Vegetation, grass, sage, willow and cottonwood.
		Alt. 6130 ft.
		Temp. 70°.
		November 8th, 1902.

Nov. 9th, at 1h 05m A. M. l. m. t. (after having carefully adjusted the transit last evening) I observe Polaris at western elongation, and mark a point in the line on a plug driven in the ground about 10 chs. N. of my station. At 7h A. M. Nov. 9th, 1902, I lay off the azimuth of Polaris 1° 30.9′ to the E. and mark a point in the true meridian thus found on a plug driven in the ground 10 chs. N. of my station.

Altitude	Chs.	
		The magnetic bearing of the meridian is N. 13° 50′ W.
		This gives magnetic variation 13° 50′ E.
		I now lay off an angle of 90° from the meridian from the N. to the E. for the tangent to the parallel.
		In all these observations and the subsequent turning of angles the mean of 4 sights was used, with the telescope reversed at each sight.
		I compare the steel tapes with the standard and find them of correct length.

81st Mile

		East on the tangent to the parallel.
	4.00	Top of spur slope S.; descend.
	11.00	Dry ravine course S. W.; ascend gradually.
	50.00	After a careful search I failed to find any trace of Darling's 250th mile cor.
6160 ft.	73.00	Foot of hills bears N. E. and S. W.; leave valley, enter timber; ascend.
[fol. 100]		Difference between measurement of 80 chs. by 2 sets of chainmen is 2 lks.; position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
6210 ft.	80.00	N. .76 of a link from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 81st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 81 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 12 ins. dia. bears N. 50° E. 84 lks. dist. marked Colo., 81 M., B. T.
		A cedar tree 10 ins. dia. bears S. 48° E. 67 lks. dist. marked N. M. 81 M., B. T.
		A cedar tree 12 ins. dia. bears S. 31½° W. 45 lks. dist. marked N. M., 81 M., B. T.
		A cedar tree 10 ins. dia. bears N. 59° 20′ W. 98 lks. dist. marked Colo., 81 M., B. T.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.
		Alt. 6210 ft.
		Temp. 35°.

82nd Mile

Altitude	Chs.	
		S. 89° 30' E. on the tangent to the parallel. Ascend through scrub cedar and pinon timber.
	16.00	Top of spur slope N. Thence along N. slope.
6873 ft.	60.00	Top of ridge bears N. E. and S. W.; descend along S. slope.
	70.00	Bottom of ravine near head, course S.; ascend. Difference between measurements of 80 chs. by 2 sets of chainmen is 6 lks. position of middle point.
[fol. 101]		By 1st set 80.63 chs.
6340 ft.	80.00	By 2nd set 79.97 chs.; the mean of which is N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 82nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 82 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 11 ins. dia. bears N. 27° 45' E. 29 lks. dist. marked Colo., 82 M., B. T.
		A cedar tree 8 ins. dia. bears S. 21½° E. 49 lks. dist. marked N. M., 82 M., B. T.
		A pinon tree 10 ins. dia. bears S. 36½° W. 35 lks. dist. marked N. M., 82 M., B. T.
		A cedar tree 11 ins. dia. bears N. 46° 10' W. 12 lks. dist. marked Colo., 82 M., B. T.
		This cor. stands on brow of bluff sloping S. W. Land, rolling.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scrub cedar and pinon.
		Alt. 6846 ft.
		Temp. 76°

83rd Mile

		S. 89° 30' E. on the tangent to the parallel.
6846 ft.	12.66	Top of ridge bears N. W. and S. E.
	21.00	Top of ridge bears N. W. and S. E.
		Stadia measurement.
		Angle 3° —'. Rod 11.54 double = 2308 ft. × .9973 = 2301.77 ft. + C. = 1.15 ft. = 2302.92 ft. = 34.89 chs. + 21.00 chs. = 55.89 chs.
	56.00	Darling's 248th mile cor. bears S. 8.15 chs. dist. A decayed cedar post marked C. on N., 248 on E., and N. M. on S. I destroyed this cor.
6550 ft.	52.66	Bottom of ravine course S. E.; ascend.
6650 ft.	58.89	Stadia point on cliffs about 100 ft. high, bear N. W. and S. E.

Altitude	Chs.	
		Tape measurement.
6650 ft.	61.00	On wall of canon, bears N. E. and S. W.; descend.
[fol. 102]		Difference between measurements of 45.11 chs. by 2 sets of chainmen is 1 lks. position of middle point.
		By 1st set 45.13 chs.
		By 2nd set 45.09 chs.; the mean of which is 45.11 chs. + 34.89 chs.
6575 ft.	80.00	N. 7 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long, with flanges at the bottom 2 ft. in the ground for 83rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 83 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		A cedar tree 10 ins. dia. bears N. 5° W. 43 lks. dist. marked Colo., 83 M., B. T.
		A cedar tree 8 ins. dia. bears S. 58½° E. 55 lks. dist. marked N. M., 83 M., B. T.
		A pinon tree 6 ins. dia. bears S. 30° 25' W. 61 lks. dist. marked N. M., 83 M., B. T.
		A cedar tree 7 ins. dia. bears N. 61½° W. 60 lks. dist. marked Colo., 83 M., B. T.
		This cor. stands on flat in thick timber.
		Land, rolling and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, sage, scrub cedar and pinon.
		Alt. 6575 ft.
		Temp. 60

84th Mile

		S. 89° 58' E. on the tangent to the parallel.
6575 ft.	7.08	On top of cliff, wall bears N. E. and S. W.; descend.
		Stadia measurement.
		Angle 5° —, Rod 8.85 double = 1770 ft. × .9924 = 1756.55 ft. + C. = 1.14 ft. = 1757.69 ft. = 26.63 chs. + 7.08 chs. = 33.71 chs.
	12.00	Foot of cliffs about 150 ft. high, bear N. E. and S. W.
	18.00	Dry gluch course N. E., ascend along S. slope.
	33.71	Stadia point.
		Stadia measurement.
[fol. 103]		Angle 6° +, Rod 9.23 double = 1846 ft. × .9891 = 1825.88 ft. + C. = 1.14 ft. = 1827.02 ft. = 27.68 chs. × 33.71 chs. = 61.39 chs.

Altitude	Chs.	
	46.00	Top of spur slope N.
	46.70	Darling's 247th mile cor. bears S. 8.53 chs. A sandstone 18 x 10 x 5 ins. above ground marked C. on N., 247 on E., N. M. on S., 1868 on W. has been reset in a mound with pits and bearing trees. I destroyed this cor.
	61.39	Stadia point, thence by tape measurement.
6480 ft.	73.23	On top of bluff, wall of rocks bears S. and N. about 3 chs. then N. W.; descend.
		Stadia measurement.
		Angle 29° —, Rod 4.20 sings = 420 ft. × .7650 = 321.30 ft. + C. × 1.00 = 322.30 = 4.88 chs. + 73.23 chs. = 78.11 chs.
	78.11	Stadia point thence by tape measurement.
6340 ft	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia 4 ft. long with flanges at the bottom 2 ft. in the ground for 84th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 84 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 8 ins. dia. bears N. 45½ E. 43 lks. dist. marked Colo., 84 M., B. T.
		A cedar 12 ins. dia. bears S. 33° E. 68 lks. dist. marked N. M., 84 M., B. T.
		A cedar tree 6 ins. dia. bears N. 71° 10' W. 43 lks. dist. marked Colo., 84 M., B. T.
		No tree S. W. within limits suitable for bearing tree.
		This cor. stands near foot of cliffs about 150 ft high that bear N. and S.
		Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, sage, scrub cedar and pinon.
[fol. 104]		Alt. 6340 ft.
		Temp. 50°.

November 9th, 1902

I examine the levels and collimation of the tran-it, compare the steel tapes with the standard and find all correct and in adjustment.

85th Mile

S. 89° 57' E. on the tangent to the parallel. Descend.

	6.00	Foot of bad land slope, 50 ft. below cor., bears N. and S.

Altitude	Chs.	
		Leave timber, enter sage brush valley, bears N. and S.
	14.00	Dry gluch, course N. E.
	47.00	Darling's 246th mile cor. bears S. 8.76 chs. An old decayed post re-set with a new one beside it, marked C. on N., 246 on E., N. M. on S., 1868 on W. I destroyed this cor.
	58.00	Dry gluch from N. W. course E., thence down general course of same.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing, the mean is
61.50 ft.	80.00	N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 85th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 85 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
		A conical peak covered with timber bears N. 32° 45′ E.
		A conical point on Conejos Range bears N. 86° 40′ E.
		A N. salient of S. bluff bears S. 49° 50′ E.
		A N. salient of high ridge we have passed over bears N. 75° 35′ W.
[fol. 165]		Land, gently rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage and scattering timber
		Alt. 6150 ft.
		Temp 58°.

86th Mile

		S. 89° 57′, E. on the tangent to the parallel. Down the general course of dry arroyo.
	20.00	Leave arroyo, course N. E.
	47.00	Darling's 245th mile cor. bears S. 8.60 chs. An old post with new one beside it, marked C. on N., 245 on E., N. M. on S.; I destroyed this cor.
	59.50	Same arroyo in rocky canon, course S. E.
	65.00	Same arroyo in canon, course N. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
61.27 ft.	80.00	N. 27 lks from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the botton 2 ft. in the ground for 86th mile

Altitude	Chs.	
		cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 86 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		The section house at Vallejo station on D. & R. G. W. R. R. bears N. 0° 50′ W. about 1 mile dist.
		Conical timbered peak bears N. 23° 38′ E.
		N. salient of S. bluff bears S. 23° 40′ E.
		Tree on conical peak S. of San Juan River bears S. 48° 24′ E.
		Land, gently rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass and sage.
[fol. 106]		Alt. 6127 ft.
		Temp. 70°.

87th Mile

		S. 89° 56′ E. on the tangent to the parallel.
	7.50	Dry arroyo, course N.
	47.05	Darling's 244th mile cor. bears S. 8.55 chs. New post and small sandstone. Post marked C. on N., 244 on E., N. M. on S.; I destroyed this cor.
	52.00	Road bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is nothing; the mean is
6119 ft.	80.00	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 87th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 87 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		Cone shaped timbered peak bears N. 13° 40′ E.
		Tree on top of cone shaped peak S. of San Juan River bears S. 38° 40′ E.
		E. end of high bluff bears S. 7° 30′ W.
		N. salient of high ridge that the line passed over bears N. 81° 30′ W.
		Land, gently rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage and greasewood.
		Alt. 6140 ft.
		Temp. 75°.

88th Mile

Altitude	Chs.	
		S. 89° 55′ E. on the tangent to the parallel.
		Over rolling lands.
	5.00	Dry arroyo, course S. E.; small pond or reservoir
[fol. 107]		about ½ mile S. E.
	42.00	Top of spur slope S.; descend.
	47.38	Darling's 243rd mile cor. bears S. 8.00 chs. A sandstone top broken off marked 243; I destroy this cor.
	52.00	Dry bed of creek 100 lks. wide, course S. W.; ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point
		By 1st set 80.02 chs.
		By 2nd set, 79.98 chs.; the mean of which is
6200 ft.	80.00	N. 49 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 88th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 88 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of cor. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		Cone-shaped timbered peak bears N. 2° 08′ E.
		E. end of bluff bears S. 48° 10′ W.
		N. salient of high ridge back on line bears N. 83° 09′ W.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage and greasewood.
		Alt. 6200 ft.
		Temp. 71°.

89th Mile

		S. 89° 55′ E. on the tangent to the parallel.
		Ascend.
	16.00	Enter scattering timber bears N. and S.
	25.00	On mesa bears N. E. and S. W.
	31.56	Wagon road bears N. W. and S. E.
	47.00	After a careful search I failed to find Darling's 242nd mile cor.
	64.00	Wagon road bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 2 lks. position of middle point
[fol. 108]		by 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
6230 ft.	80.00	N. 62 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft in the ground for 89th mile cor.

Altitude	Chs.	
		A brass cap on the top of the pipe has raised letters Colo. on the N., N. M. on S. and 89 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 3 ft. base 2 ft. high around the post.
		A pinon tree 10 ins. dia. bears N. 77° 35' E 98 lks. dist. marked Colo., 89 M., B. T.
		A cedar tree 10 ins. dia. bears S. 18° E 88 lks. dist. marked N. M., 89 M., B. T.
		A cedar tree 12 ins. dia. bears N. 51° W 206 lks. dist. marked Colo., 89 M., B. T.
		No tree S. W. within limits suitable for bearing tree.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage, scattering scrub cedar and pinon.
		Aff. 6230 ft.
		Temp. 68°.

90th Mile

		S. 89° 54' E. on the tangent to the parallel.
	8.50	Brow of bluff bears N. E. and S. W.; descend
	27.50	Bottom of ravine about 150 ft. deep, course S. W.: ascend.
6180 ft.	35.00	Top of bluff bears N. E. and S. W. D. & R. G. W. R. R. track about 10 chs. N. Failed to find Darling's 241st mile cor.
6180 ft.	45.47	Top of river bluff, bears N. E. and S. W.
		Stadia measurement.
		Angle 4°. —. Rod 8.51 double = 1702 ft. × .9951 = 1693.66 ft. + C. = 1.15 ft. = 1694.81 ft. = 25.68 chs. + 45.47 chs. = 71.15 chs.
	53.30	W. edge of water in San Juan River, about
[fol. 109]		100 ft. below top of bluff, course S. W.
	55.00	E. bank of river, course S. W.; clear water, 3 ft. deep; enter willow and cottonwood brush. Abeytia's house about 10 chs. S. W.
	66.00	Enter cultivated field bears N. E. and S. W.; property of J. J. Abeytia.
	71.15	Stadia point.
		Tape measurement.
	72.20	Irrigation ditch, course S. W.
		Difference between measurements of 54.32 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 54.33 chs.

Altitude	Chs.	
		By 2nd set 54.31 chs.; the mean of which is 54.32 chs. = 25.68 chs.
6100 ft.	80.00	N. 76 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 90th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on E. and 90 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		This cor. stands in cultivated field.
		A cottonwood tree 6 ins. dia. bears N. 68° 40' E. 435 lks. dist. marked Colo., 90 M., B. T.
		A cottonwood tree 18 ins. dia. bears N. 74° 50' W. 301 lks. dist. marked Colo., 90 M., B. T.
		No trees S. of line along here.
		Rosa P. O., a Mexican settlement about 60 chs. S. W.
		Land, mesa and river bottom.
		Soil, sand and clay, 2nd and 3rd rate.
		Vegetation, grass, sage, greasewood and willow, cottonwood and pinon and cedar on bluff.
		Alt. 6100 ft.
		Temp. 60°.

November 10th, 1902.

[fol. 110]

91st Mile

I examine the transit and find it in adjustment, compare the steel tapes with standard and find them of correct length.

		S. 89° 53' E. on the tangent to the parallel.
	18.25	Irrigating ditch, course S. W. Leave irrigated land; ascend over rolling sagebrush valley, bears N. E. and S. W.
	22.00	Wagon road bears N. E. and S. W.
	32.75	Wagon road bears N. E. and S. W.
	42.80	Wagon road bears N. E. and S. W., from Rosa to Arboles.
	47.00	After careful search I failed to find Darling's 240th mile cor.
6200 ft.	65.00	Foot of hills, leave valley of the San Juan bears N. E. and S. W. Enter timber; ascend.
		Difference between measurements of 72.45 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 72.46 chs.

Altitude	Chs.	
		By 2nd set 72.44 chs., the mean of which is 72.45 chs.
	72.45	Top of spur, slope S.
		Stadia measurement.
		Angle 14° +, rod 11.40 single = 1140 ft. × .9415 = 1073.31 ft. + C. = 1.11 ft. = 1074.42 ft. = 16.28 chs. + 72.45 chs. = 88.73 chs. — 80.00 chs. = 8.73 chs. on 92nd mile.
	80.00	Falls on steep slide bank. Impracticable to establish corner at this point.
		Land, valley and rough hills.
		Soil, sand and clay, 2nd and 3rd rate.
		Vegetation, grass, sage, scrub cedar and pinon.

92nd Mile

		S. 89° 53' E. on the tangent to the parallel.
6610 ft.	8.73	N. 94 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 91st mile cor. A brass cap on the top of the
[fol. 111]		pipe has raised letters Colo. on N., N. M. on S. and 91.109 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 13 ins. dia. bears N. 43° 80' E. 31 lks. dist. marked Colo. 91.109 M., B. T.
		A pinon tree 5 ins. dia. bears S. 6° 05' E. 31 lks. dist. marked N. M., 91.109 M., B. T.
		No other trees within limits suitable for bearing trees.
		Arboles R. R. station and mouth of Piedras River about a mile a little W. of N.
		This cor. stands on sharp spur sloping W.
		Steep slide bank on S.
		Alt. 6610 ft.
		Temp. 70°.
		Stadia measurement.
		Angle 13° +, Rod 9.53 single = 953 ft. × .9494 = 904.78 ft. + C. = 1.12 ft. = 905.90 ft. = 13.72 chs. + 8.73 chs. = 22.45 chs.
6180 ft.	22.45	On sharp spur slope S.; descend.
		Stadia measurement.
		Angle 3° —, Rod 12.30 double = 2460 ft. × .9988 = 1318.42 ft. + C. = 1.15 ft. = 1319.57 ft. = 19.99 chs. + 22.45 chs. = 42.44 chs.
6700 ft.	28.00	Bottom of dry ravine, course N. E.
	42.44	On spur slope N.; descend.

Altitude	Chs.	
		Stadia measurement.
		Angle 3° —. Rod 12.30 double = 2460 ft. × .9973 + 2453.36 ft. + C. = 1.15 ft. = 2454.51 ft. = 37.19 chs. + 42.44 chs. = 79.63 chs.
[illegible]	00	Bottom of dry ravine, 200 ft. deep, course N. W.; ascend.
[illegible]	9.63	Stadia point, thence by tape measurement
6800 ft.	0.00	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 92nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 92 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
[fol. 112]		Pits impracticable.
		This cor. stands on spur sloping N.
		A pinon trees 6 ins. dia. bears N. 63½° E. 41 lks. dist. marked Colo., 92 M., B. T.
		A pinon tree 7 ins. dia. bears S. 18° 45' E. 39 lks. dist. marked N. M., 92 M., B. T.
		A cedar tree 9 ins. dia. bears S. 59° W. 36 lks. dist. marked N. M., 92 M., B. T.
		A cedar trees 7 ins. dia. bears N. 25¼° W. 41 lks. dist. marked Colo., 92 M., B. T.
		Land, very rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, cedar and pinon.
		Alt. 6800 ft.
		Temp. 45°.

November 14th, 1902.

November 12th, rained all day, no line run.
November 13th, I examine the transit and find it in adjustment, compare the tapes with the standard and find them of correct length.

93rd Mile.

S. 89° 52' E. on the tangent to the parallel.
Stadia measurement.
Angle 12° —. Rod 13.00 double = 2600 ft. × .9568 = 2487.68 ft. + C. = 1.12 ft. = 2488.80 ft. = 37.70 chs.

37.70 Stadia point, thence by tape measurement; ascend.

Altitude	Chs.	
	44.00	Top of high spur slope N., thence along steep brushy N. slope.
		Difference between measurements of 42.30 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 42.32 chs.
		By 2nd set 42.28 chs.; the mean of which is 42.30 chs. + 37.70 chs. =
	80.00	Falls on steep N. slope in dense oak underbrush, impracticable to establish the cor. at this point.
[fol. 113]		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, cedar, pinon and oak brush.

94th Mile

		S. 89° 52′ E. on the tangent to the parallel. Ascent along steep N. slope.
7500 ft.	8.00	N. 131 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 93rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 93.1 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		This cor. stands on spur sloping N.
		A pinon tree 5 ins. dia. bears N. 65° W. 99 lks. dist. marked Colo., 93.1 M., B. T.
		A sandstone in place 6 x 6 x 5 ft., a cross (X) on the face of which bears S. 45° W. 110 lks. dist. mkd. N. M., 93.1 M., B. O.
		No other trees or objects within limits suitable for bearing trees.
		This cor. stands on steep N. slope about 150 lks. down from the top of the bluff.
		Alt. 7500 ft.
		Temp. 48°.
		Thence along N. slope of bluff about 1400 ft. above the San Juan River.
	40.06	Top of spur slope N.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
7500 ft.	80.00	N. 150 lks. from the tangent.

Altitude	Chs.	
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 94th mile cor. A brass cap on the top of the pipe has raised
		[fol. 114] letters Colo. on N., N. M. on S. and 94 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No bearing trees.
		Land, rolling and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, scrub cedar, pinon and oak brush.
		Alt. 7500 ft.
		Temp. 40°.

95th Mile

		S. 89° 51′ E. on the tangent to the parallel.
		Along steep N. slope of bluff.
7500 ft.	32.00	Top of spur slope N. E.; descend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 14 lks position of middle point.
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is
7125 ft.	80.00	N. 172 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the gound for 95th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 95 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A yellow pine 14 ins. dia. bears N. 70° E. 110 lks. dist. marked Colo., 95 M. B. T.
		A yellow pine tree 14 ins. dia. bears S. 30° W. 85 lks. dist. marked N. M., 95 M., B. T.
		A yellow pine tree 10 ins. dia. bears N. 6° W. 82 lks. dist. marked Colo., 95 M., B. T.
		No tree S. W., within limit suitable for bearing tree.
		Land, rolling and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, cedar, pinon, yellow pine and oak brush.
		[fol. 115] Alt. 7125 ft.
		Temp. 40°.

November 13th, 1902.

I examine the adjustments of the transit, compare the steel tapes with the standard and find all correct.

96th Mile

Altitude	Chs.	
		S. 89° 50′ E. on the tangent to the parallel.
	18.81	On bluff bears N. E. and S. W.; descend.
		Stadia measurement.
		Angle 6° —, Rod 8.69 double = 1738 ft. × .9891 = 1719.06 ft. + C. = 1.14 ft. = 1720.20 ft. = 26.06 chs. + 18.81 chs. = 44.87 chs.
	28.00	Bottom of ravine, course N. E.; ascend.
	44.87	Stadia point, top of spur slope N.
		Tape measurement,
		Difference between measurements of 35.13 chs. by 2 sets of chainmen is 4 lks. Position of middle point.
		By 1st set 35.15 chs.
		By 2nd set 35.11 chs.; the mean of which is 35.13 chs. + 44.87 chs. =
	80.00	Falls on steep brushy hillside. Impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, cedar, pinon, yellow pine and oak brush.

97th Mile

		S. 89° 50′ E. on the tangent to the parallel.
6800 ft.	12.00	N. 200 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 96th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 96.15 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
[fol. 116]		A cedar tree 10 ins. dia. bears N. 12° 45′ E. 62 lks. dist. marked Colo., 96.15 M., B. T.
		A cedar tree 12 ins. dia. bears S. 72° E. 69 lks. dist. marked N. M., 96.15 M., B. T.
		A pinon tree 5 ins. dia. bears S. 87° 40′ W. 92 lks. dist. marked N. M., 96.15 M., B. T.
		A cedar tree 8 ins. dia. bears N. 31° W. 46 lks. dist. marked Colo., 96.15 M., B. T.
		This cor. stands on rocky spur slope N.
		Alt. 6800 ft.
		Temp. 54°.

Altitude	Chs.	
		Descending along N. slope over spurs.
	75.00	Dry gulch, course N. E.
		Difference between measurements of 68 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 68.04 chs.
		By 2nd set 67.96 chs.: the mean of which is 68.00 chs. + 12.00 chs. =
6810 ft.	80.00	N. 221 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 97th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 97 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 8 ins. dia. bears N. 37° E. 71 lks. dist. marked Colo., 97 M., B. T.
		A yellow pine tree 13 ins. dia. bears S. 30½° E. 151 lks. dist. marked N. M., 97 M., B. T.
		A cedar tree 8 ins. dia. bears S. 31° 20′ W. 45 lks. dist. marked N. M., 97 M., B. T.
		A pinon tree 6 ins. dia. bears N. 13° W. 74 lks. dist. marked Colo., 97 M., B. T.
		Land, rolling and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, cedar, pinon, yellow pine, oak brush.
		Alt. 6810 ft.
		Temp. 50°.

[fol. 117]

98th Mile

		S. 89° 49′ E. on the tangent to the paralled. Ascend.
	18.50	Top of spur slope N. Thence descending along N. slope over spur.
6200 ft.	72.00	Foot of hills enter San Juan Valley, bears N. W. and S. E.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.: the mean of which is
6200 ft.	80.00	N. 247 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 98th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 98 M. stamped in the center. Dug pits 36 × 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. and raised a mound of earth

Altitude Chs.

5 ft. base 2 ft. high around the post.
A cottonwood tree 24 ins. dia. bears N. 58° 33' E. 86 lks. dist. marked Colo., 98 M., B. T.
A cottonwood tree 14 ins. dia. bears S. 32¼° E. 140 lks. dist. marked N. M., 98 M., B. T.
A cottonwood tree 14 ins. dia. bears S. 43° 20' W. 115 lks. dist. marked N. M., 98 M., B. T.
A cottonwood tree 15 ins. dia. bears N. 24½° W. 78 lks. dist. marked Colo., 98 M., B. T.
Land, rolling and valley.
Soil, clay and sandy loam, 2nd and 3rd rate.
Vegetation, grass, cedar, pinon, yellow pine and cottonwood timber; cottonwood, willow, sage and oak brush.
Alt. 6200 ft.
Temp. 40°.

November 14th, 1902.

Nov. 15th, at 3h 42m A. M. l. m. t., (having previously examined the transit and found it in perfect adjustment), I observe Polaris at western
[fol. 118] elongation and mark a point in the line on a plug driven in the ground N. of my station.
At 7h A. M. I lay off the azimuth of Polaris 1° 31.1' to the E. and mark a point in the true meridian thus found on a plug driven in the ground N. of my station.
The magnetic bearing of the meridian is N. 13° 50' W. This gives the magnetic variation 13° 50' E.
I now lay off an angle of 90° from the meridian to the E. for the tangent to the parallel. In all these observations and the subsequent turning of angles the mean of 4 sights was used, with the telescope reversed at each sight.

29th Mile

East on the tangent to the parallel.

2.64 W. bank of the San Juan River bears N. and S., bank 8 ft. high.

3.64 Across river to sand bar; E. edge of water bears N. E. and S. E., clear water about 2½ ft. deep, swift current.

9.27 E. bank of river bears N. W. and S. W. 6 ft. high; outer dense willow and cottonwood brush.

Altitude	Chs.	
	14.00	Leave brush; enter cultivated field, bears N. W. and S. E.
	16.20	Wire fence bears N. and S. Enter cornfield.
	21.85	Leave field; enter willow brush, bears N. E. and S. W.
	27.00	Leave brush and enter cultivated field bears N. E. and S. W.
	33.00	Leave field; enter brush bears N. and S.
	39.60	Leave brush; enter cultivated field bears N. and S.
	46.00	Mexican adobe building bears 6.00 chs. S.
	52.00	Leave cultivated field and enter timber and brush, bears N. and S.
	60.00	Enter same field bears N. W. and S. E.
	65.00	Mexican adobe house about 3 chs. N. Stable about 2 chs. S.
[fol. 119]		Difference between measurements of 66.22 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 66.23 chs.
		By 2nd set 66.21 chs.; the mean of which is course of river S. W.
	66.22	W. bank of San Juan River bears N. E. and S. W. Stadia measurement across river.
		Angle 0°, Rod 7.47 double = 1434 ft. + 0.
		1.15 ft. = 1435.15 ft. = 21.74 chs. + 66.22 chs. = 87.96 chs. — 80.00 chs. = 7.96 chs. on the 100th mile.
	80.00	Falls in the river, impracticable to establish the cor. at this point.
		Land, valley, nearly level.
		Soil, sandy loam, 2nd rate.
		Vegetation, cottonwood and willow.

100th Mile

		S. 89° 59' E. on the tangent to the parallel.
	7.50	E. edge of water in river, course N. W.
	7.96	Stadia point in road bears N. W. and S. E. Tape measurement.
6200 ft.	8.26	N. I link from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 100th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 100 M. stamped in the center. Raised a mound of stone 5 ft. base 2ft. high around the post.
		Pits impracticable.

Altitude	Chs	
		A cottonwood tree 24 ins. dia. bears N. 30¼° E. 125 lks. dist. marked Colo., 99.103 M., B. T.
		A cottonwood tree 24 ins. dia. bears N. 34° W. 162 lks. dist. marked Colo. 99.103 M., B. T.
		No tree on other side except those across the river.
		Alt. 6200 ft.
		Temp. 50°
		[fol 120] The section house at Carracas station on the D. & R. G. W. R. R. about 12.00 chs. N. W.
		Thence along river bottom through willow brush and cottonwood timber.
	31.00	Old log stable on line, Mexican adobe house about 10 chs. SE.
		Difference between measurements of 29.35 chs. by 2 sets of chainmen is nothing; the mean is 29.35 + 8.26 chs. =
	37.61	Stadia measurement from this point.
		Angle 0° Rod 7.086 ft. double = 1412 ft. + C. = 1.15 ft. = 1413.15 ft. = 21.41 chs. + 37.61 chs. = 59.02 chs.
	38.00	Right bank of San Juan River, course S. W.
	39.40	Left bank on sand bar from N. E. to S. W.
	59.00	Edge of water in river course N. W.; thence across bend.
	59.02	On left bank of river 8 ft. high bears N. E. and S. W.
		Tape measurement.
	~~60.00~~	~~Road bears N. E. and S. W.~~
	70.29	River bank course N.
		Stadia measurement across river.
		Angle 0°, Rod 4 ft. single = 400 ft. + C. = 1.15 ft. = 401.15 ft. = 6.08 chs. + 70.29 chs. = 76.37 chs.
	74.00	On E. bank of river, water flows N. Enter timber and brush.
	76.37	Stadia point.
		Tape measurement.
6230 ft.	80.00	N. 3 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 100th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S, and 100 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist.
		Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A cottonwood tree 20 ins. dia. bears N. 41½° E. 12 lks. dist. marked Colo., 100 M., B. T.
		[fol 121] A cottonwood tree 6 ins. dia. bears S. 55° 20' E. 86 lks. dist. marked N. M., 100 M., B. T.

Altitude	Chs.	
		A cottonwood tree 10 ins. dia. bears S. 46° W. 61 lks. dist. marked N. M., 100 M., B. T. A cottonwood tree 13 ins. dia. bears N. 43° 40' W. 141 lks. dist. marked Colo., 100 M., B. T.
		About 10 chs. S. to river.
		Land, river bottom.
		Soil, sandy loam, 2nd rate.
		Vegetation, cottonwood, willow and sage brush.
		Alt, 6230 ft.
		Temp. 65°.

101st Mile

		S. 89° 59' E. on the tangent to the parallel.
	12.80	W. bank of river bears N. E. and S. W. Water flows S. W.
		Stadia measurement across river.
		Angle 0°., Rod 1.70 single = 170 ft. + C. = 1.15 ft. = 171.15 ft. = 2.59 chs. + 12.80 chs. = 15.39 chs.
	15.39	E. bank of river bears N. E. and S. W. Foot of hill bears N. E. and S. W. Leave San Juan River valley; ascend.
		Tape measurement.
6330 ft.	30.12	Top of spur slope N. 100 ft. above river; descend.
6230 ft.	35.50	Bottom of dry ravine, 100 ft. deep, course from S. E. to N.; ascend.
6380 ft.	61.00	Top of rocky spur slope S.; descend.
		Difference between measurements of 64.61 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 64.63 chs.
		By 2nd set 64.59 chs.; the mean of which is 64.61 chs. + 15.39 chs. =
6350 ft.	80.00	Falls in rocky gulch, course S. impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
[fol. 122]		Vegetation, sage and oak brush, cedar and pinion timber.

November 15th, 1902.

102nd Mile

		S. 89° 58' E. on the tangent to the parallel. Ascend
6510 ft.	16.00	N. 8 lks. from the tangent.

Altitude	Chs.	
		Set an iron pipe 3 ins. dia 4 ft. long with flanges at the bottom 2 ft. in the ground for 101st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 101.2 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. around the post. Pits impracticable.
		A cedar tree 8 ins. dia. bears N. 62° E. 65 lks. dist. marked Colo., 101.2 M., B. T.
		A cedar tree 14 ins. dia. bears S. 22½° E. 43 lks. dist. marked N. M., 101.2 M., B. T.
		A cedar tree 12 ins. dia. bears S. 71° 40′ W. 89 lks. dist. marked N. M., 101.2 M., B. T.
		A pinon tree 7 ins. dia bears N. 48° 20′ W. 57 lks. dist. marked Colo., 101.2 M., B. T.
		This cor. stands on spur sloping S.
		Alt. 6510 ft.
		Temp. 46°.
	25.00	Dry ravine course S. W.
6800 ft.	64.00	Top of high ridge bears N. and S. Altitude 6800 ft.
		Descend.
		Difference between measurements of 64.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 64.03 chs.
		By 2nd set 63.97 chs.; the mean of which is 64.00 chs. + 16.00 chs. =
6790 ft.	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 102nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 102 M.
[fol. 123]		stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine 14 ins. dia bears N. 15° E. 9 lks. dist. marked Colo., 102 M., B. T.
		A yellow pine 14 ins. dia., bears S. 29° 20′ E. 34 lks. dist. marked N. M., 102 M., B. T.
		A yellow pine 14 ins. dia. bears S. 44° 40′ W. 70 lks. dist. marked N. M., 102 M., B. T.
		A yellow pine tree 18 ins. dia. bears N. 52° 20′ W. 47 lks. Dist. marked Colo., 102 M., B. T.
		This cor. stands on spur slope N.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, cedar and yellow pine, and oak brush.
		Alt. 6790 ft.
		Temp. 58°.

103rd Mile

Altitude	Chs.	
		S. 89° 57′ E. on the tangent to the parallel. Descend.
	1.50	Dry gulch, course N.; ascend.
6790 ft.	7.00	Top of spur, slope N.; descend.
	55.00	Bottom of dry ravine, 200 ft. deep, course N.; ascend along steep N. slope.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 14 lks. position of middle point.
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is
6750 ft.	80.00	N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at bottom 2 ft. in the ground for 103rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 103 M. stamped in the center. Raised a mound of stone 5 ft. base and 2 ft. high around the post.
		Pits impracticable.
[fol. 124]		A yellow pine tree 24 ins. dia. bears N. 86° W. 84 lks. dist. marked Colo., 103 M., B. T. No other trees within limits.
		This cor. stands on steep N. slope in oak brush, dense.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Alt. 6750 ft.
		Temp. 45°.

104th Mile

		S. 89° 57′ E. on the tangent to the parallel. Ascend along steep N. slope.
6780 ft.	31.30	Top of sharp spur slope N. Descend along N. slope.
	60.00	Bottom of dry ravine about 200 ft. deep, course N. W.; ascend.
	63.00	Bottom of rocky ravine, course S.
	68.00	Top of spur slope N.
	78.00	Dry ravine near head, course N.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
7100 ft.	80.00	N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 104th mile

Altitude	Chs.	
		cor. A brass cap on the top of the pipe has raised letters Colo. on N.; N. M. on S. and 104 M. stamped in the center. Raised a mound of stone, 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 10 ins. dia. bears N. 27° 20' E. 118 lks. dist. marked Colo., 104 M., B. T.
		A spruce tree 19 ins. dia. bears S. 21° E. 13 lks. dist. marked N. M., 104 M., B. T.
		A spruce tree 24 ins. dia. bears S. 55° 40' W. 30 lks. dist. marked N. M., 104 M., B. T.
		A pinon tree 5 ins. dia. bears N. 42° W. 106 lks. dist marked Colo. 104 M., B. T.
[fol. 125]		Land, rolling and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, sage and oak brush, cedar, pinon, yellow pine, and spruce timber.
		Alt. 7100 ft.
		Temp. 46°.

November 16th, 1902.

I examine the adjustment of the transit and compare the steel tapes with the standard, find all correct and in adjustment.

105th Mile

		S. 89° 56' E. on the tangent to the parallel. Ascend.
7150 ft.	5.91	Top of high spur slope S.
		Stadia measurement.
		Angle 5° —, Rod 9.18 double = 1836 ft. × 1822.05 ft. + C. = 1.14 ft. = 1823.19 = 27.62 chs. + 5.91 chs. = 33.53 chs.
	18.00	Dry ravine about 150 ft. deep, course S. W.: ascend.
	33.53	Stadia point.
		Tape measurement.
7200 ft.	35.00	Top of ridge bears N. and S. Altitude 7200 ft.: descend.
		Difference between measurements of 46.47 chs. by 2 sets of chainmen is 8 lks. position of middle point
		By 1st set 46.51 chs.
		By 2nd set 46.43 chs.; the mean of which is 46.47 chs. + 33.35 chs. =

Altitude	Chs.	
	80.00	Falls in deep canon, 150 ft. below top of ridge, impracticable to establish the cor. at this point. Land, rough and broken. Soil, rocky, sand and clay, 3rd rate. Vegetation, oak brush, cedar and pinon, yellow pine and spruce timber.

106th Mile

		S. 89° 55' E. on the tangent to the parallel. [fol. 126] Descend.
	4.00	Bottom of ravine, course N.; ascend.
7400 ft.	24.00	N. 41 lks. from the tangent, Set an iron pipe 3 ins. dia; 4 ft. long with flanges at the bottom 2 ft. in the ground for 105th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 105.3 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. A yellow pine tree 10 ins. dia. bears N. 44° E. 76 lks. dist. marked Colo., 105.3 M., B. T. A yellow pine tree 12 ins. dia. bears S. 20° E. 100 lks. dist. marked N. M., 105.3 M., B. T. A yellow pine tree 24 ins. dia. bears S. 38° 40' W. 89 lks. dist., marked N. M., 105.3 M., B. T. A yellow pine tree 10 ins. dia. bears N. 5° W. 170 lks. dist. marked Colo., 105.3 M., B. T. This cor stands on E. slope of high ridge, near top, bears N. and S. Alt. 7400 ft. Temp. 55°. Descend.
	38.00	Bottom of dry ravine 300 ft. deep, course N.; ascend.
		Difference between measurements of 37.36 chs. by 2 sets of chainmen is 2 lks. position of middle point. By 1st set 37.37 chs.; By 2nd set 37.35 chs.; the mean of which is 37.36 chs. + 24.00 chs. =
7400 ft.	61.36	On high ridge bears N. and S. A trap dyke about 1 ch. N. Stadia measurement. Angle 6 —, Rod 13.00 double = 2600 ft. × .9891 = 2571.66 ft. + C. = 1.14 ft. = 1572.80 ft. = 38.98 chs. + 61.36 chs. = 100.34 chs. — 80.00 chs. = 20.34 chs. on 107th mile.

Altitude	Chs.	
..	80.00	Fall in rocky canon, 300 ft. deep, course S. E. Impracticable to establish the cor at this point.
[fol. 127]		Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, oak brush, cedar and pinon, yellow pine and spruce timber.

107th Mile.

S. 89° 55' E. on the tangent to the parallel.
Ascend along S. slope.

7290 ft.	20.34	Stadia point, thence by Tape measurement.
7290 ft.	27.00	N. 53 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 106th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 106,338 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pinon tree 6 ins. dia. bears S. 16° E. 33 lks. dist. marked N. M., 106,338 M., B. T.
		A pinon tree 7 ins. dia. bears S. 86° 40' W. 27 lks. dist. marked N. M., 106,338 M., B. T.
		A (X) cross on sandstone wall 6 ft. high bears N. 14° 20' E. 27 lks. dist. marked Colo., 106,338 M., B. C.
		No other bearing objects within limits.
		Alt. 7290 ft.
		Temp. 52°.
		This cor. stands on rocky spur slope S. Top of rocky butte about 2 chs N. E.; descend.
		Difference between measurements of 36.55 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 36.56 chs.
		By 2nd set 36.54 chs., the mean of which is 36.55 chs. + 27.80 chs. = 63.55 chs.
6810 ft.	63.55	On top of river bluff bears N. and S.; descend. Stadia measurement.
		Angle 18°. Rod 7.12 double = 1424 ft.
		90° 12.88 [illegible] 1.08 ft. = 1289.09
[fol. 128]		0 12.53 chs. = 63.55 chs. = 83.08 chs.
		80 chs. = 2.08 chs. on 108th mile.
	79.90	Foot of bluff about 100 ft. high. W. edge of Navajo River course N., 70 lks. wide.

Altitude	Chs.	
	80.00	Falls in river, impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak brush, cedar, pinon, yellow pine and spruce timber.

November 17th, 1902.

I examine the adjustments of the transit and compare the steel tapes with the standard, and find all correct and in adjustment.

108th Mile

		S. 89° 54' E. on the tangent to the parallel.
	0.60	E. bank of Navajo River bears S. and N. E. Enter aspen and willow brush.
6410 ft.	2.00	N. 62 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 107th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 107.025 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 6 ins. dia. bears N. 50° 50' E. 47 lks. dist. marked Colo., 107.025 M., B. T.
		A spruce tree 18 ins. dia. bears S. 27° 05' E. 232 lks. dist. marked N. M., 107.025 M., B. T.
		An aspen tree 6 ins. dia. bears N. 73° 10' W. 43 lks. dist. marked Colo., 107.025 M., B. T.
		No tree S. W. within limits suitable for bearing tree.
		A pine post 10 ins. square 2½ ft. above ground firmly set, marks somewhat indistinct, U. R. on N. A. 57 N. on E., and N. M. on S. bears S. 41 05' W. 9.13 chs. dist. Supposed to be old S. E. cor. Southern Ute Reservation. This is the first cor. or mark of any kind I have been able to find [fol. 129] indicating the boundary line since leaving the 88th mile of our line, the 243rd mile cor. of the Darling line.
		Alt. 6410 ft.
		Temp. 30
	3.00	D. & R. G. W. R. R. tracks bears N. and S.
	5.00	Foot of bluff bears N. and S.; leave river bottom, ascend steep

Altitude	Chs.	
6900 ft.	19.00	Top of bluff bears N. and S. Altitude 6900 ft.
	57.00	Dry bed or ravine course S.; ascend.
		Difference between measurements of 78 chs. by 2 sets of chainmen is 14 lks. position of middle point
		By 1st set 78.07 chs.
		By 2nd set 77.93 chs., the mean of which is 78 chs. + 2.00 chs.
7110 ft.	80.00	N. 76 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 108th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 108 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable
		A yellow pine tree 10 ins. dia. bears N. 41½ E. 107 lks. dist. marked Colo., 108 M., B. T.
		A yellow pine tree 26 ins. dia. bears S. 17° 45' E. 109 lks. dist. marked N. M., 108 M., B. T.
		A yellow pine tree 24 ins. dia. bears S. 72° 45' W. 229 lks. dist. marked N. M. 108 M., B. T.
		A yellow pine tree 24 ins. dia. bears N. 16° 45' W. 148 lks. dist. marked Colo., 108 M., B. T.
		Land, very rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak brush, aspen, cedar, pinon, yellow pine and spruce timber.
		Alt. 7110 ft.
		Temp. 48°.

[fol. 130] 109th Mile

		S. 89° 53' E. on the tangent to the parallel. Ascend.
	22.40	Top of spur slope N. W. about 50 ft. above cor. Descend.
	34.50	Bottom of dry ravine, course N. W. about 50 ft. below cor. Ascend.
	73.00	Top of ridge bears N. and S. about 600 ft. above last cor.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks. position of middle point
		By 1st set 20.05 chs.
		By 2nd set 79.95 chs., the mean of which is
7710 ft.	80.00	N. 92 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 109th mile

Altitude	Chs.	
		cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 109 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 6 ins. dia. bears N. 36° E. 50 lks. dist. marked Colo., 109 M., B. T.
		A pinon tree 12 ins. dia. bears S. 56° W. 58 lks. dist. marked N. M., 109 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak brush, cedar, pinon, yellow pine and spruce timber.
		Alt. 7710 ft.
		Temp. 60°.
		This cor. stands on steep rocky S. slope near head of gulch, course S. E.

110th Mile

		S. 89° 53' E. on the tangent to the parallel. Descend.
	15.00	Bottom of deep dry ravine, course S. W. about
[fol. 131]		300 ft. deep.
	35.40	On sharp ridge, 300 ft. high, bears N. and S. Descend by Stadia measurement,
		Angle 1° —. Rod 12.70 double = 2540 ft. × .9997 = 2539.24 ft. + C. = 1.15 ft. = 2540.39 ft. = 38.49 chs. + 35.40 chs. = 73.89 chs.
	47.00	Deep rocky canon, course S. W. about 300 ft. below last ridge.
	73.89	Stadia point on sharp spur slope S. Thence by tape measurement
7610 ft.	80.00	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 110th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 110 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A spruce tree 16 ins. dia. bears N. 63½° E. 25 lks. dist. marked Colo., 110 M., B. T.
		A yellow pine tree 14 ins. dia. bears S. 41° E. 34 lks. dist. marked N. M., 110 M., B. T.
		A spruce tree 14 ins. dia. bears N. 16½° W. 49 lks. dist. marked Colo., 110 M., B. T.

Altitude	Chs.	
		No tree S. W. within limits suitable for bearing tree.
		Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak brush, cedar, pinon, yellow pine and spruce timber.
		Alt. 7610 ft.
		Temp. 42°.
		November 18th, 1902

I examine the transit and find it in adjustment, compare the steel tapes with the standard and find them of correct length.

111th Mile

		S. 89° 52′ E. on the tangent to the parallel.
		Descend.
	1.20	Bottom of dry ravine 50 ft. deep, course S. W.;
[fol. 132]		ascend steep.
	53.00	Top of ridge bears N. and S. about 300 ft. above bottom of ravine; descend.
	77.00	Dry gulch, course S. E. about 50 ft. below top of ridge; ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
7960 ft.	80.00	N. 129 lks. from the tangent, on spur, slope S. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 111th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., and N. M., on S. and 111 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A yellow pine 18 ins. dia. bears N. 35° 20′ E. 23 lks. dist. marked Colo., 111 M., B. T.
		A cedar tree 10 ins. dia. bears S. 62° 20′ E. 52 lks. dist. marked N. M., 111 M., B. T.
		A yellow pine tree 10 ins. dia. bears S. 51° 20′ W. 111 lks. dist. marked N. M., 111 M., B. T.
		A yellow pine tree 14 ins. dia. bears N. 66° W. 88 lks. dist. marked Colo., 111 M., B. T.
		Land, rough and broken.

Altitude	Chs.	
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak brush, aspen, cedar, pinon, yellow pine and spruce timber.
		Alt. 7900 ft.
		Temp. 50°.

112th Mile

		S. 89° 52′ E. on the tangent to the parallel.
		Descend.
	35.00	Bottom of rocky canon about 400 ft. deep, course S.; ascend.
		Difference between measurements of 57.37 chs. by 2 sets of chainmen is 4 lks. position of middle point.
[fol. 133]		By 1st set 57.39 chs.
		By 2nd set 57.35 chs.; the mean of which is
7900 ft.	57.37	On spur slope S.
		Stadia measurement.
		Angle 10′ +, Rod 11.76 double = 2352 ft. × .9698 = 2280.97 ft. + C. = 1.13 ft. = 2282.10 ft. = 34.57 chs. + 57.37 chs. = 91.94 chs. — 80.00 chs. = 11.94 chs. on 113th mile.
	65.00	Bottom of canon, course S. W.
	70.00	On spur slope N.
8090 ft.	80.00	Falls in edge of canon, course nearly W. impracticable to establish the cor. at this place.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, oak brush, aspen, cedar, pinon, yellow pine and spruce timber.

113th Mile

		S. 89° 51′ E. on the tangent to the parallel.
	11.94	Stadia point.
8400 ft.	16.00	N. 154 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 112th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 112.2 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A yellow pine tree 16 ins. dia. bears N. 46° E. 93 lks. dist. marked Colo., 112.2 M., B. T.

Altitude	Chs.	
		A yellow pine tree 14 ins. dia. bears S. 77° 20' W. 212 lks. dist. marked N. M., 112.2 M., B. T.
		A yellow pine tree 14 ins. dia. bears N. 20° W. 110 lks. dist. marked Colo., 112.2 M., B. T.
		No tree S. E. within limits.
		Alt. 8400 ft.
		Temp. 54°.
	23.00	Ravine near head, drains S. W.
8430 ft.	31.70	On W. bank of box canon, perpendicular walls about 300 ft. deep, course S., heads about 5 chs. N.
[fol. 134]		Stadia measurement,
		Angle 3° —, Rod 5.60 single = 560 ft. × .9973 = 558.49 ft. + C. = 1.15 ft. = 559.64 ft. = 8.48 chs. + 31.70 chs. = 40.18 chs.
	36.00	Bottom of canon, course S.
	40.18	On E. wall of canon, bears N. and S. same elevation as W. wall. Thence by tape measurement.
	77.50	Dry ravine, course S.
		Difference between measurements of 39.82 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 39.83 chs.
		By 2nd set 39.81 chs.; the mean of which is 39.82 chs. + 40.18 chs. =
8510 ft.	80.00	N. 172 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 113th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 113 M. stamped in the center. Raised mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 16 ins. dia. bears N. 24° 10' E. 117 lks. dist. marked Colo., 113 M., B. T.
		A yellow pine tree 10 ins. dia. bears S. 65° 25' E. 19 lks. dist. marked N. M., 113 M., B. T.
		A yellow pine tree 8 ins. dia. bears S. 15½° W. 86 lks. dist., marked N. M., 113 M., B. T.
		A yellow pine tree 18 ins. dia. bears N. 23° 45' W. 98 lks. dist. marked Colo., 113 M., B. T.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, oak brush, aspen, cedar, pinon, yellow pine and spruce.
		Alt. 8510 ft.
		Temp 46°.

November 19th, 1902

Altitude Chs

[fol. 135] I examine the adjustments of the transit compare the steel tapes with the standard and find all correct, and in adjustment.

114th Mile

S. 89° 30' E. on the tangent to the parallel.

10.63 The monument set by S. S. Gannett, 1897, for the intersection of the 37th parallel with the 107th meridian W. from Greenwich bears S. 1 lo chs. from this tangent and the offset to the parallel at this point is 1.75 chs. N. places this monument 3.15 chs. S. of the 37th parallel as determined by my line. This is a monument consisting of a porphyry stone 10 ins. square and 18 ins. high above ground marked.
On N.-S. E. cor. S. Ute Res., On E., 107 D. E. G.
On S. N. M., On W.-107 D. E. G. W. I.
Some bearing trees marked with nails driven in them forming letters, and at the N. a witness monument, about 6 ft. base, 3½ ft high. There are 3 blazed lines running through the timber W. from here for more than 5 miles, but after a careful search I failed to find any Darling corners along or near these lines.

12.00 Dry ravine, course S. about 20 ft. deep; ascend.
Archuleta Mountain bears N. and S.

42.00 Dry ravine, course S. W.

65.00 Enter grove of aspen timber bears N. and S.
Difference between measurements of 80 chs. by 2 sets of chainmen is 4 lks. position of middle point.
By 1st set 80.02 chs.
By 2nd set 79.98 chs.; the mean of which is

8950 ft. 80.00 N. 196 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 114th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 114 M. stamped in the center. Raised a mound of stone
[fol. 136] 5 ft. base 2 ft. high around the post. Pits impracticable.
An aspen tree 6 ins. dia. bears S. 37° 20' E. 16 lks. dist. marked N. M., 114 M., B. T.
An aspen tree 42 ins. dia. bears S. 35° W. 67 lks. dist. marked N. M., 114 M., B. T.
A yellow pine tree 30 ins. dia. bears N. 59° W. 436 lks. dist. marked Colo., 114 M., B. T.

Altitude	Chs	
		No tree N. 9 within limits suitable for bearing tree.
		Land, mountainous.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, yellow pine, spruce and balsam fir, cedar, pinon and aspen, oak and aspen brush.
		Alt. 8950 ft.
		Temp. 50.

115th Mile

		S. 89° 50' E. on the tangent to the paralled.
		Ascend
9000 ft	11.50	Brown of mountain bears N. and S. Slope W. Altitude 9000 ft. Ascend gradually across top of mountain.
		Difference between measurements of 72 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 72.04 chs.
		By 2nd set 71.96 chs., the mean of which is
9050 ft	72.00	On E. brow of Archuleta Mountain, bears N. and S.
		As I find the 80 chs. point will be inaccessible I set the cor. at this point.
		N. 221 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground for 115th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 114.9 M. stamped in the center. Raised a mound of stone 3 ft. base 2 ft. high around the post. Pits impracticable.
		A yellow pine tree 14 ins. dia. bears N. 80° E. 104 lks. dist. marked Colo., 114.9 M., B. T.
[fol. 137]		A spruce tree 10 ins. dia. bears S. 29° 40' E. 43 lks. dist. marked N. M., 114.9 M., B. T.
		A yellow pine 10 ins. dia. bears S. 15° 30' W. 96 lks. dist. marked N. M., 114.9 M., B. T.
		A yellow pine tree 14 ins. dia. bears N. 35° W. 68 lks. dist. marked Colo., 114.9 M., B. T.
		Alt. 9050 ft.
		Temp. 45°.
	77.42	Thence by stadia measurement; descend.
		Angle 17 — Rod 43.00 double = 2600 ft. × .9145 = 2377.70 ft. ÷ 4 = 4.10 ft. = 2373.80 ft. = 36.04 chs. + 77.42 chs. = 113.46 chs. — 80.00 chs. = 33.46 chs. on 116th mile.
	80.00	Falls on side of cliff wall, inaccessible.

Altitude	Chs.	
		Land, mountainous. Soil, rocky and sandy, 3rd rate. Vegetation, yellow pine, balsam fir, cedar and aspen and oak brush.
		November 20th, 1902

I examine the transit, compare the tapes and find all correct and in adjustment.

116th Mile

		S. 89° 49' E. on the tangent to the parallel. Descend over rough rocky, broken mountain side.
	3.00	Foot of cliffs bears N. W. and S. E. about 450 ft. below cor.
	33.46	Stadia point, thence by tape measurement. Descend over spurs over S. E. slope. Difference between measurements of 46.54 chs. by 2 sets of chainmen is 6 lks. position of middle point. By 1st set 46.57 chs. By 2nd set 46.51 chs.: the mean of which is 46.54 chs. + 33.46 chs. =
8010 ft.	80.00	N. 247 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 116th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 116 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
[fol. 138]		A yellow pine tree 48 ins. dia. bears N. 17° E. 128 lks. dist., marked Colo., 116 M., B. T. A yellow pine tree 30 ins. dia. bears S. 66° 20' E. 146 lks. dist., marked N. M., 116 M., B. T. A yellow pine tree 24 ins. dia. bears S. 61° W. 78 lks. dist., marked N. M., 116 M., B. T. No tree N. W. within limits suitable for a bearing tree. Land, mountainous. Soil, sand and clay, 3rd rate. Vegetation, oak brush, scattering yellow pine and aspen. Alt. 8010 ft. Temp. 50°.

117th Mile

Altitude	Chs	
		S. 89° 48' E. on the tangent to the parallel. Descend over spurs.
7050 ft.	66.00	Foot of mountain bears N. and S. Enter nearly level valley.
	70.20	Wire fence bears N. and S. Enter Gomez's and Archuleta's field.

Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks.-position of middle point.
By 1st set 80.05 chs.
By 2nd set 79.95 chs.; the mean of which is

7050 ft.	80.00	N. 275 lks. from the tangent.

Set temporary cor.
Adjusted under instructions dated Sept. 9th, 1903.
See page 423.
Land, mountainous and valley.
Soil, sand and clay loam, 2nd and 3rd rate.
Vegetation, oak brush, scattering yellow pine.
Alt. 7050 ft.
Temp. 40°.

November 21st, 1902.

[fol. 139]

November 23rd I carefully adjust the transit in all its parts, compare the steel tapes with the standard and find them of correct length.
November 24th, at 3h 06m A. M. l. m. t. I observe Polaris at Western Elongation and mark a point in the line so found on a plug driven in the ground N. of my station.
At 8h A. M. November 24th, 1902, I lay off the azimuth of Polaris 1° 31.1' to the E. and mark a point in the true meridian thus determined, on a plug driven in the ground N. of my station.
The magnetic bearing of the meridian is N. 13° 53' W. This gives the magnetic variation, 13° 53' E.
I now lay off an angle of 90° from the meridian, from the N. to the E. for the tangent to the parallel. In all these observations and the subsequent turning of angles the mean of four sights was used with the telescope reversed at each sight.

118th Mile

Altitude	Chs.	
		East on the tangent to the parallel.
	3.00	Road from Archuleta's store and grist mill to Edith bears N. and S.
	6.00	Our astronomical station No. 3 bears S. 29.68 chs. dist.
		The latitude of this station by astronomical observation on the nights of Oct. 5th, 6th and 7th, 1902, is determined to be 36° 59' 40.88" or 29.29 chs. South of the 37th parallel. Our line projected from the West is therefore 39 lks. N. of the true parallel, as determined by the astronomical observations.
		This being inside the limit allowed by the Hon. Commissioner I erect temporary astronomical monument at this point and continue the line. See page 424.
[fol. 140]		Thence across cultivated land.
	9.91	Coyote Creek, 15 lks. wide, course S.
	15.90	Narrow guage R. R. for hauling logs to the saw mill bears N. W. and S. E.
	36.80	Road bears N. and S.
	47.80	Leave cultivated field bears N. E. and S. W., wire fence.
		New Mexico Lumber Co.'s saw mill in center of town of Edith bears S. about 6 chs. dist.
	53.00	Small house on line.
	54.70	Center of main street in Edith bears N. E. and S. W.
	58.30	R. R. track to saw mill bears N. E. and S. W.
	63.00	River bottom; enter willow brush bears N. E. and S. W.
	75.30	Navajo River 75 lks. wide, clear water, about 2 ft. deep, swift current, course S. E.
		Difference between measurements of 74 chs. by 2 sets of chainmen is 4 lks. position of middle point
		By 1st set 74.02 chs.
		By 2nd set 73.98 chs.; the mean of which is 74.00 chs. + 6.00 chs. =
7050 ft.	80.00	Falls in patch of willow in river bottom, subject to over flow, impracticable to establish the cor at this point.
		Land, nearly level, valley and river bottom.
		Soil, sandy loam, 2nd rate.
		Vegetation, grass, sage, willow and cottonwood brush.

119th Mile

Altitude	Chs.	
		S. 89° 57′ E. on the tangent to the parallel.
	6.00	Leave river bottom bears N. E. and S. W.
	6.80	Ditch flume, course of water S. W.
	7.00	Road bears N. E. and S. W.
7100 ft.	8.00	N. 1 link from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 118th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 118.1 M.
[fol. 141]		stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A yellow pine tree 12 ins. dia. bears S. 61° E. 251 lks. dist. marked N. M., 118.1 M., B. T.
		S. end of bridge across Navajo River bears N. 3 E. about 3 chs. dist.
		S. end of ditch flume across the river bears N. 44° 20′ E. about 5 chs. dist.
		No other trees within limits.
		This cor. stands on sharp point of bluff, slope N.
		Alt. 7100 ft.
		Temp. 30°.
		Ascend along N. slope.
	13.00	Point of spur slope N. E. Descend; enter timber bears N. and S.
	18.00	Dry ravine, course N.; ascend.
	65.00	Top of spur slope N. about 700 ft. above last cor.
		Difference between measurements of 72 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 72.05 chs.
		By 2nd set 71.95 chs.; the mean of which is 72.00 chs. + 8.00 chs. =
7810 ft.	80.00	N. 3 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 119th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 119 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		This cor. stands on steep N. slope, in oak brush.
		No tree within limits suitable for bearing trees.
		Land, mountainous.
		Soil, rocky, clay and sandy, 3rd rate.
		Vegetation, grass, oak and aspen brush, yellow pine, spruce, fir, cedar and pinon.
[fol. 142]		Alt. 7810 ft.
		Temp. 38°.

120th Mile

Altitude	Chs.	
		S. 89° 59' E. on the tangent to the parallel. Along steep [illegible] slope, through oak, aspen and pine brush.
	17.44	On sharp spur slope N., very steep.
		Stadia measurement.
		Angle 8° +. Rod 13.00 double = 2600 ft. × .9806 = 2549.56 ft. + [illegible] = 1.14 ft. = 2550.70 ft. = 38.64 chs. + 17.44 chs. = 56.08 chs.
	39.00	Bottom of dry canon about 600 ft. deep, course N. W.
	49.00	Wagon road in canon bears N. W. and S. E.; ascend.
	56.08	Stadia point on E. wall of canon, bears N. W. and S. E. about 600 ft. above bottom, thence by tape measurement.
		Ascend gradually.
		Difference between measurements of 23.92 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 23.93 chs.
		By 2nd set 23.91 chs.; the mean of which is 23.92 chs. + 56.08 chs. =
8300 ft.	80.00	N. 7 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 120th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 120 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A yellow pine tree 18 ins. dia. bears N. 40° E. 75 lks. dist. marked Colo., 120 M., B. T.
		A yellow pine tree 6 ins. dia. bears S. 17° 40' E. 70 lks. dist. marked N. M., 120 M., B. T.
		A yellow pine tree 16 ins. dia. bears S. 55½° W. 91 lks. dist., marked N. M., 120 M., B. T.
[fol. 143]		A yellow pine tree 10 ins. dia. bears N. 35° W. 55 lks. dist. marked Colo., 120 M., B. T.
		Land mountainous.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, grass, oak and aspen brush, yellow pine, spruce, fir, cedar and aspen timber.
		Alt. 7810 ft.
		Temp. 38°.

November 24th, 1902.

Altitude	Chs.	
		I examine the adjustment of the transit and compare the steel tapes with the standard, find all correct and in adjustment.

121st Mile

		S. 89° 58' E. on the tangent to the parallel.
	17.76	Top of spur slope N. W. about 10 ft. above last station.
		Stadia measurement,
		Angle 1° +. Rod 12.98 double. = 2.596 ft. × .9997 = 2,595.22 ft. + C. 1.15 ft. = 2,596.37 ft. = 39.34 chs. + 17.76 chs. = 57.10 chs.
	42.00	Bottom of dry canon about 400 ft. deep, course N. W.
	57.10	On spur slope S.; thence by
		Tape measurement.
	69.60	Dry ravine, course S.
8400 ft.	75.00	Top of rocky spur slope S. As I find the 80 chs. point will fall in brush on rocky wall of canon, I place the 121st mile cor. at this point.
		N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 121st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 120.937 M. stamped in the center. Raised a mound of stone 5 ft. base 3 ft. high around the post. Pits impracticable.
		A yellow pine tree 10 ins. dia. bears N. 65° E. 85 lks. dist. marked Colo., 120.937 M., B. T.
[fol. 144]		A yellow pine tree 18 ins. dia. bears S. 57° E. 118 lks. dist. marked N. M., 120.937 M., B. T.
		A yellow pine tree 16 ins. dia. bears S. 54° W. 118 lks. dist. marked N. M., 120.937 M., B. T.
		A yellow pine tree 18 ins. dia. bears N. 40° W. 51 lks. dist. marked Colo., 120.937 M., B. T
	80.00	Falls on rocky side of canon, impracticable to establish the cor. at this point.
		Land, mountainous.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak and aspen brush, pine, spruce, and balsam fir timber.
		Alt. 8,400 ft.
		Temp. 52°.

122nd Mile

Altitude	Chs.	
		S. 89° 57′ on the tangent to the parallel.
	15.00	Bottom of dry canon, about 200 ft. deep, course S. W.
		Ascend.
	52.00	Top of spur slope N.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
8760 ft.	80.00	By 2nd set 79.94 chs.; the mean of which is N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 122nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 122 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N. S. E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A yellow pine tree 35 ins. dia. bears N. 46° 20′ E. 335 lks. dist. marked Colo. 122 M., B. T.
[fol. 145]		A yellow pine tree 26 ins. dia. bears S. 52° W. 204 lks. dist. marked N. M., 122 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, mountainous.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, oak and aspen brush, pine, spruce and balsam fir timber.
		Alt. 8,760 ft.
		Temp. 48°.

November 25th, 1902.

Having run the line through to the 4th Astronomical Station, near Ortiz, on our 167th mile and found the falling to be 13.50 chs. North of the 37th parallel as determined by astronomical observations on the nights of October 12th and 13th, 1902, this being 8.90 chs. outside of the limit of 3″ of arc allowed by the Hon. Commissioner in accordance with Special Instructions dated July 7th, 1902, I return to this point and apply a correction of 21 lks. per mile to the South amounting to 9.24 chs. for the 44 miles, from the 122nd mile to the 166th mile corners, to bring the line inside of said limit.

July 12th, 1903.

Altitude	Chs.	
		I examine and adjust the transit, test the stadia wires for correct measurement, compare the steel tapes with the standard and find all correct.

123rd Mile

S. 89° 57′ E. on the tangent to the parallel.
Ascending gradually along N. W. slope, through scattering timber and brush.

8810 ft.	6.00	Top of high bluff, bears N. W. and S. E.; descend.
	8.31	Stadia measurement from this point.
		A red peak at S. end of high range bears N. 41° 51′ E. about 15 miles dist.
		Sharp peak on Conejos Range bears N. 77° E. about 25 miles dist.
[fol. 146]		A sharp timbered conical peak bears S. 62° 18′ E. about 8 miles dist.
		By Stadia.
		Angle 16 —, Rod 13.00 double = 2,600 ft. × .9240 = 2,402.40 ft. + C. = 1.10 ft. = 2,403.50 ft. = 36.41 chs. + 8.31 chs. = 44.72 chs.
8000 ft.	33.00	Foot of bluff about 800 ft. high, bears N. W. and S. E., thence over rolling brushy land.
	44.72	Stadia point, thence by tape measurement.
		Difference between measurements of 43.59 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 43.62 chs.
		By 2nd set 43.56 chs.; the mean of which is 43.59 chs. + 36.41 chs. =
7800 ft.	80.00	N. 27 lks.—Correction 21 lks. S = N. 6 lks. from tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 123rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 123 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E., and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		An aspen tree 6 ins. dia. bears N. 44° 20′ E. 54 lks. dist. marked Colo., 123 M., B. T.
		An aspen tree 14 ins. dia. bears S. 3° 10′ E. 53 lks. dist. marked N. M., 123 M., B. T.
		An aspen tree 6 ins. dia. bears S. 51° W. 54 lks. dist. marked N. M., 123 M., B. T.
		An aspen tree 6 ins. dia. bears N. 8° 40′ W. 78 lks. dist. marked Colo., 123 M., B. T.
		Land, rough and broken.

Altitude	Chs.	
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scattering pine and aspen timber; oak and aspen brush.
		Alt. 7,800 ft.
		Temp. 82

[fol. 147] 124th Mile

		S. 89° 56' E. on the tangent to the parallel.
		Over rolling hills and scattering timber and brush.
	41.15	W. edge of little valley, bears N. and S.
	50.20	Trail bears N. and S.
	55.00	Leave valley and ascend; bears N. and S.
	65.00	Top of spur about 75 ft. high, slope N.; descend.
	70.00	Enter little valley bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
7650 ft.	80.00	N. 37 lks.—Correction 42 lks. S.=S. 5 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 124th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 124 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A yellow pine tree 12 ins. dia. bears N. 21½° E. 147 lks. dist. marked Colo., 124 M., B. T.
		A yellow pine tree 12 ins. dia. bears S. 9° 35' W. 403 lks. dist. marked N. M., 124 M., B. T.
		A yellow pine tree 12 ins. dia. bears N. 51° 45' W. 391 lks. dist. marked Colo., 124 M., B. T.
		No tree S. E. within limits suitable for bearing tree.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, scattering pine timber; oak and aspen brush.
		Much of the timber has been cut off.
		Alt. 7,650 ft.
		Temp. 85°.

[fol. 148] 125th Mile

Altitude	Chs.	
		S. 89° 55′ E. on the tangent to the parallel.
		Over rolling land.
	5.00	Bottom of dry gulch, course N.
	6.00	Trail bears N. and S. Foot of hill bears N. and S. Leave small valley; ascend.
	15.00	Top of spur about 50 ft. high, slope N. W.; descend.
	35.00	Foot of hill, enter small valley bears N. W. and S. W.
	36.00	Grade of old logging railroad bears N. W. and S. W.
	43.90	Dry gulch, course N.
	48.56	Dry gulch, course N. W.
	63.00	Foot of hills, leave valley bears N. W. and S. E.; ascend.
	70.00	Top of spur about 50 ft. above valley, slope S.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is
7710 ft.	80.00	N. 49 lks.—Correction 63 lks. S.= S. 14 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 125th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 125 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A yellow pine tree 14 ins. dia. bears N. 52° 40′ E. 132 lks. dist. marked Colo., 125 M., B. T.
		No other trees within limits.
		Land, rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, scattering pine timber, oak and aspen brush; grass and sage.
[fol. 149]		Alt. 7710 ft.
		Temp. 85°.

July 12th, 1903.

I examine the adjustments of the transit, compare the steel tapes with the standard, and find everything correct and in adjustment.

Altitude	Chs.	126th Mile
		S. 89° 53′ E. on the tangent to the parallel.
		Ascending through brush and scattering timber.
	22.00	Top of ridge 75 ft. high, bears S. E. and N. W.
	29.00	In small valley bears N. E. and S. W.
	36.00	Timber road bears S. E. and N. W.
	42.00	Leave valley, ascend, bears S. E. and N. W.
	53.00	On spur slope N. W.; about 100 ft. high; descend.
	75.00	In broad ravine, course N.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 14 lks. position of middle point.
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is
8050 ft.	80.00	On S. W. slope in dense brush, I advance this corner.
		Land, rough and broken.
		Soil, clay loam, 3rd rate.
		Vegetation, oak and aspen brush, heavy pine timber has been cut off, now scattering.

127th Mile

S. 89° 54′ E. on the tangent to the parallel.
Ascend in dense brush.

8200 ft.	3.00	Top of spur slope N.

N. 62 lks.—Correction 84 lks. S. = S. 22 lks. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 126th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 126.037 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.

[fol. 150]

A yellow pine tree 12 ins. dia. bears N. 19° 50′ E. 93 lks. dist. marked Colo., 126.037 M., B. T.
A yellow pine tree 20 ins. dia. bears S. 62° E. 115 lks. dist. marked N. M., 126.037 M., B. T.
A yellow pine tree 10 ins. dia. bears S. 34° 10′ W. 112 lks. dist. marked N. M., 126.037 M., B. T.
A spruce tree 6 ins. dia. bears N. 74° 10′ W. 72 lks. dist. marked Colo., 126.037 M., B. T.
Alt. 8200 ft.
Temp. 62°.
Descend.

20.00	Dry gulch, course N.; ascend.
33.00	Top of spur 100 ft. high, slope N. W.

Altitude	Chs.	
8200 ft.	53.00	Bottom of dry ravine, course N. W.; ascend in dense oak brush.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 16 lks. position of middle point.
		By 1st set 80.08 chs.
		By 2nd set 79.92 chs.; the mean of which is
8560 ft.	80.00	N. 76 lks. Correction 105 lks. S. = S. 29 lks. from the tangent.
		Set an iron pipe 2 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 127th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 127 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine tree 24 ins. dia. bears N. 36° E. 370 lks. dist. marked Colo., 127 M., B. T.
		No other trees within limits. This cor stands on a bench about 200 ft. above the bottom of the ravine.
[fol. 151]		Land, rough and broken.
		Soil, clay loam, 3rd rate.
		Vegetation, oak and aspen brush, scattering pine timber.
		Alt. 8500 ft.
		Temp. 60°

128th Mile

		S. 89° 53' E. on the tangent to the parallel. Ascend steep S. W. slope in dense oak brush.
	28.29	On spur slope N.
	51.00	Top of spur slope N. Enter timber, thence along N. slope.
8800 ft.	66.79	Top of bluff bears N. and S. about 300 ft. above last cor.
		Descend.
		Stadia measurement.
		Angle 3° —, 12.98 double = 2596 ft. × .9973 = 2588.99 ft. + C. = 1.15 ft. = 2590.14 ft. = 39.24 chs. + 66.79 chs. = 166.03 chs. — 80.00 chs. = 26.03 chs. on 129th mile.
8300 ft.	80.00	Comes in ravine about 500 ft. below top of bluff, stream 3 lks. wide, course N. I advance this cor.
		Land, mountainous.
		Soil, rocky, 3rd rate.
		Vegetation, pine and spruce timber; oak and aspen brush.

Altitude	Chs.	129th Mile
		S. 89° 53' E. on the tangent to the parallel. Ascend in dense timber and brush.
	26.02	Stadia point, thence by tape measurement.
8900 ft.	32.00	N. 99 lks.—Correction 131 lks. S. = S. 35 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 128th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 128.4 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised
[fol. 152]		a mound of earth 5 ft. base 2 ft. high around the post.
		An aspen tree 7 ins. dia. bears N. 46½° E. 29 lks. dist. marked Colo., 128.4 M., B. T.
		An aspen tree 6 ins. dia. bears S. 57° E. 97 lks. dist. marked N. M., 128.4 M., B. T.
		An aspen tree 7 ins. dia. bears N. 18° W. 124 lks. dist. marked Colo., 128.4 M., B. T.
		No tree within limits S. W. suitable for bearing tree.
		Alt. 8900 ft.
		Temp. 60°.
		Thence along bench; swampy meadow drains N.
	50.00	Foot of ridge bears N. E. and S. W. Leave bench; ascend.
		Enter timber bears N. E. and S. W.
9100 ft.	55.50	Top of ridge bears N. E. and S. W., 200 ft. above cor.
	58.00	Spur slope N. E., descend general course of draw, through spruce and aspen timber.
		Difference between measurements of 80.00 chs by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs., the mean of which is
8950 ft.	80.00	N. 110 lks. Correction 147 lks. S. = S. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 129th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 129 M., tamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 12 ins. dia. bears N. 11° 20' E. 37 lks. dist. marked Colo., 129 M., B. T.
		An aspen tree 8 ins. dia. bears S. 64½° E. 21 lks. dist. marked N. M., 129 M., B. T.
		A spruce tree 12 ins. dia. bears S. 51½° W. 62 lks. dist. marked N. M., 129 M., B. T.

Altitude	Chs.	
		A spruce tree 18 ins. dia. bears N. 70° 45′ W. 41 lks. dist. marked Colo., 129 M., B. T.
[fol. 153]		Land, mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, grass; pine, spruce and aspen timber; oak and aspen brush.
		Alt. 8950 ft.
		Temp. 64°.

130th Mile

		S. 89° 52′ E. on the tangent to the parallel.
		Descending through timber and brush.
	16.00	Dry ravine, course N. E.
	25.00	Spur slope, N. E.; descend.
	35.00	Bottom of ravine, 100 ft. deep, course N. E.; ascend.
	49.00	Top of spur 150 ft. above bottom of ravine, slope N. E.; descend.
	60.00	Ravine, water in holes, course N. E.; ascend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 20 lks., position of middle point.
		By 1st set 80.10 chs.
		By 2nd set 79.90 chs.; the mean of which is
9000 ft.	80.00	N. 129 lks.—Correction 168 lks. S.=S. 39 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 130th mile cor. A brass cap on top of the pipe has raised letters Colo.-on N., N. M. on S. and 130 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft high around the post. Pits impracticable.
		This cor. stands on Continental Divide, which bears N. 65° E. and S. 65° W. for about 30 chs. then about S. 30° W.
		A yellow pine tree 24 ins. dia. bears N. 61½° E. 26 lks. dist. marked Colo., 130 M., B. T.
		A spruce tree 16 ins. dia. bears S. 57½° E. 125 lks. dis. marked N. M., 130 M., B. T.
		A yellow pine tree 12 ins. dia. bears S. 5° W. 137 lks. dist. marked N. M., 130 M., B. T.
		A spruce tree 10 ins. dia. bears N. 49° W. 146 lks. dist. marked Colo., 130 M., B. T.
[fol. 154]		Land, mountainous, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, grass; pine, spruce and aspen timber; dense oak, aspen, serviceberry and maple brush.
		Alt. 9000 ft.
		Temp. 64°. July 13th, 1903.

Altitude	Chs.	
		I examine the transit both as to levels and collimation, and find it in adjustment, compare the steel tapes with the standard and find them of correct length.

131st Mile

		S. 89° 52′ E. on the tangent to the parallel. Descending along S. E. slope through timber and brush.
	33.00	Leave timber and brush bears N. and S.
	40.92	Wagon road, from Navajo River to Chama bears N. W. and S. E.
8850 ft.	54.78	Little Chama River, stream 4 lks. wide, course S. E.; thence across little valley.
	69.80	Leave valley, bears N. E. and S. W.; ascend. Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
8900 ft.	80.00	N. 150 lks.—Correction 189 lks. S. = S. 39 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 131st mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 137 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 16 ins. dia. bears S. 34½° W. 21.0 lks. dist. marked N. M. 131 M., B. T.
		No other trees within limits.
[fol. 155]		This corner stands at W. edge of dense oak brush.
		Red Peak, Navajo Range, bears N. 28° 43′ E. about 8 miles distant.
		Land mountainous.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, grass; pine, spruce and aspen timber; oak and aspen brush.
		Alt. 8900 ft.
		Temp. 50°.

132nd Mile

		S. 89° 51′ E. on the tangent to the parallel. Ascend; enter dense oak brush bears N. and S.
	15.60	Top of spur slope S. W. thence along S. slope, crossing gulches.

Altitude	Chs.	
	43.00	Top of spur slope S. about 200 ft. above last corner.
		Descend in dense aspen brush.
9000 ft.	80.00	Comes in aspen thicket on steep E. slope.
		I advance this cor.
		Land, mountainous.
		Soil, sandy loam, 3rd. rate.
		Vegetation, grass; scattering pine timber; dense oak and aspen brush.
		Alt. 9,000 ft.
		Temp. 50°.

133rd Mile

		S. 89° 30' E. on the tangent to the parallel.
		Descending in dense aspen brush.
	10.00	*Stream 6 lks. wide, course S. W.; ascend.
	12.00	On bench about 30 ft. above stream, bears N. E. and S. W.; leave aspen timber and brush bears N. E. and S. W.
9200 ft.	16.00	In little open flat.
		Difference between measurements of 96.00 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 96.06 chs.
		By 2nd set 95.94 chs.; the mean of which is 96.00
[fol. 156]		chs.—80.00 chs. = 16.00 chs. on 133rd mile.
		N. 177 lks.—Correction 214 lks. S. = S. 37 lks., from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 132nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 132.2 B stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 18 ins. dia. bears S. 80° 173 lks. dist. marked N. M., 132.2 M. B. T.
		An aspen tree 5 ins. dia. bears S. 47½° W. 182 lks. dist. marked N. M., 132.2 M., B. T.
		An aspen tree 5 ins. dia. bears N. 48° W. 167 lks. dist. marked Colo., 132.2 M., B. T.
		No tree within limits N. E. suitable for bearing tree.
		Alt. 9200 ft.
		Temp. 50°.
		Ascend.
	19.20	Top of ridge bears N. E. and S. W.; enter timber bears N. E. and S. W.

Altitude	Chs.	
		Descend.
	33.50	Timber road, bears N. E. and S. W.
	37.00	Stream 6 lks. wide in ravine, about 30 ft. deep, course S. W.
	40.00	On bluff—bears N. E. and S. W.; ascend, enter timber bears N. E. and S. W.
	70.00	Foot of hill bears N. E. and S. W. Enter timber bears N. E. and S. W.
		Difference between measurements of 64.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 64.02 chs.
		By 2nd set 63.98 chs.; the mean of which is 64.00 chs. + 16.00 chs. =
9250 ft.	80.00	N. 196 lks.—Correction 231 lks. S. = S. 35 lks. from the tangent.
[fol. 157]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 133rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M., on S. and 133 M. stamped in the center. Raised a mound of stone 5 ft., base 2 ft. high around the post. Pits impracticable.
		This cor. stands on N. W. slope in heavy timber.
		A spruce tree 16 ins. dia. bears N. 43½° E. 81 lks. dist. marked Colo., 133 M., B. T.
		A spruce tree 14 ins. dia. bears S. 26½° W. 70 lks. dist. marked N. M., 133 M., B. T.
		A spruce tree 16 ins. dia. bears N. 80° W. 61 lks. dist. marked Colo. 133 M., B. T.
		No tree S. E. within limits suitable for bearing tree.
		Land, mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, grass; pine, spruce and aspen timber; oak and aspen brush.
		Alt. 9250 ft.
		Temp. 65°.

134th Mile

		S. 89° 50′ E. on the tangent to the parallel. Ascend.
9400 ft.	16.00	Top of ridge bears N. E. and S. W., about 150 ft. above last corner, much dead and fallen timber. Descend along S. E. and S. slopes in dense brush.
	52.00	Bottom of dry ravine, course S.; ascend.
	64.00	Top of bluff bears N. and S.

Altitude	Chs.	
	66.06	On high spur slope S. As I find the 80.00 chs. point will come in deep canon, subject to snow slides, I place the corner at this point.
		Difference between measurements of 66.00 chs. by 2 sets of chainment is 12 lks., position of middle point
		By 1st set 66.06 chs.
		By 2nd set 65.91 chs.; the mean of which is,
9610 ft.	66.00	N. 2.6 lks. Correction 251 lks. S. = S. 35 lks. from the tangent.
[fol. 158]		Set an iron pipe 3 ins. dia. 4 ft. long with flnages at the bottom 2 ft. in the ground for 134th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 133.825 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 8 ins. dia. bears S. 28° E. 29 lks. dist. marked N. M., 133.825 M., E. T.
		An aspen tree 6 ins. dia. bears S. 19° W. 15 lks. dist. marked N. M., 133.825 M., B. T.
		No trees on other side within limits suitable for bearing trees.
		Alt. 9640 ft.
		Temp. 70°.
	68.00	On edge of high bluff, thence by stadia measurement.
		Angle 16° — ; Rod 1630, double = 2060 ft. × .9240 = 1903.44 ft. + C. = 1.10 = 1904.54 ft., = 28.85 chs. + 68.00 chs. = 96.85 chs. — 80.00 chs. = 16.85 chs. on 135th mile.
9110 ft.	80.00	Comes in deep ravine subject to snow slides.
		No corner set here.
		Land, mountainous.
		Soil, clay and sand, 3rd rate.
		Vegetation, grass; pine and spruce timber; oak, aspen and willow brush.

135th Mile

S. 89° 49′ E. on the tangent to the parallel. Ascend in dense timber and brush.

9300 ft.	16.85	Stadia point on spur slope S.; descend.
	35.00	Bottom of canon, 150 ft. below top of spur; W. fork of Chama River, 10 lks. wide, course S. W.; ascend along N. slope in timber and brush.
	70.00	Top of spur about 490 ft. above stream, slope N.; descend.

Altitude	Chs.	
		Difference between measurements of 63.15 chs by 2 sets of chainmen is 10 lks. position of middle point
		By 1st set 63.20 chs.
[fol. 159]		By 2nd set 63.10 chs.; the mean of which is 63.15 chs. + 16.85 chs. =
9500 ft.	80.00	Comes in gulch, course N. W. Stream 3 lks. wide.
		Impracticable to establish the cor. at this point.
		Land, mountainous, very rough and broken.
		Soil, rocky, 3rd rate.
		Vegetation, grass; spruce and pine timber; oak and aspen brush.

136th Mile

		S. 89° 49′ E. on the tangent to the parallel. Ascend in dense timber and brush.
9750 ft.	24.00	N. 255 lks.—Correction 279 lks. S. = S. 24 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft long with flanges at the bottom 2 ft. in the ground for 135th mile cor. A brass cap on top of the pipe has raised letters Colo on N., N. M. on S. and 135.3 M, stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		This corner stands in little opening on sharp spur, slope S. Train about 1 ch. South.
		A spruce tree 24 ins. dia. bears S. 55° 86 lks. dist. marked N. M., 135.3 M., B. T.
		A spruce tree 16 ins. dia. bears S. 85° W. 86 lks. dist. marked N. M., 135.3 M., B. T.
		A spruce tree 16 ins. dia. bears N. 15° W. 111 lks. dist. marked Colo., 135.3 M., B. T.
		No tree within limits N. E. suitable for bearing tree.
		Alt. 9750 ft.
		Temp. 70°.
		Ascend in dense timber.
10000 ft.	56.00	Top of high divide between Chama River and West Fork, Bears N. and S. Elevation 10,000 ft.
[fol. 160]		(This range is called the Navajo Mountains.)
	65.00	Leave timber bears N. and S.
	78.50	Enter timber bears N. E. and S. W.
		Difference between measurements by 2 sets of chainmen is 6 lks., position of middle point
		By 1st set 56.03 chs.
		By 2nd set 55.97 chs.; the mean of which is 56.00 chs. + 24.00 chs. =

Altitude	Chs.	
10000 ft	80.00	N. 275 lks.—Correction 2·4 lks. S. = S. 19 lks. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 136th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 136 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.

A spruce tree 14 ins. dia. bears N. 34° E. 29 lks. dist. marked N. M., 136 M., B. T.

A spruce tree 10 ins. dia. bears S. 65½° E. 26 lks. dist. marked Colo., 136 M., B. T.

A spruce tree 16 ins. dia. bears S. 41½° W. 36 lks. dist. marked N. M., 136 M., B. T.

A spruce tree 12 ins. dia. bears N. 30° W. 45 lks. dist. marked Colo., 136 M., B. T.

Land, mountainous.

Soil, clay loam, 3rd rate.

Vegetation, grass; spruce, aspen and pine timber; spruce and aspen brush.

Alt. 10,000 ft.

Temp. 75°.

July 14th, 1903.

Having carefully adjusted the transit in all its parts at the 136th mile corner, I observe Polaris at Western elongation, at 2h. 46m A. M. l. m. t. Nov. 29th, 1902, and mark at point on the line so found, on a plug driven in the ground N. of my station.

At 8h A. M. Nov. 29th, I lay off the azimuth of Polaris, 1° 31.1′ to the E. and mark a point in the true meridian thus determined on a plug [fol. 161] driven in the ground N. of my station.

The magnetic bearing of this meridian is N. 13° 50′ W.

This gives the magnetic variation 13° 50′ E.

I now lay off an angle of 90° from the meridian, from the N. to the E. for the tangent to the parallel.

In all these observations and the subsequent turning of angles, the mean of four sights was used with the telescope reversed at each sight.

N. B.—These observations on Polaris for Meridians were taken and the tangent cut out through the timber and brush before the correction and subsequent adjustment of the line was made, hence the difference in date. See report.

Altitude	Chs.	
		July 15th, 1903, at 8h A. M. I examine the transit and compare the steel tapes with the standard, and find all correct.

137th Mile

		East on the tangent to the parallel.
	4.00	Top of bluff bears N. and S.; descend over benches in timber.
	31.00	Bluff bears N. and S.; descend.
	40.00	Head of gulch course N. E.
	75.00	Hollow drains N.; ascend.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
9500 ft.	80.00	By 2nd set 79.96 chs.; the mean of which is N. .76 of a lk.—Correction 315 lks. S. = S. 314.24 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 137th mile cor. A brass cap on top of the pipe has raised letters Colo. on N. N. M., on S. and 137 M.
[fol. 162]		stamped in the center. Raised a mound of stone 3 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 10 ins. dia. bears N. 55½° E. 72 lks. dist. marked Colo., 137 M., B. T.
		An aspen tree 9 ins. dia. bears S. 87½° E. 154 lks. dist. marked N. M., 137 M., B. T.
		An aspen tree 12 ins. dia. bears S. 39½° W. 90 lks. dist. marked N. M., 137 M., B. T.
		A spruce tree 10 ins. dia. bears N. 32° W. 151 lks. dist. marked Colo., 137 M., B. T.
		This cor. stands in little opening on flat spur slope N.
		Land, mountainous.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass; spruce, pine and aspen timber; spruce and aspen brush.
		Alt. 9500 ft.
		Temp. 75°.

138th Mile

		S. 89° 59′ E. on the tangent to the parallel
		Descend over timber and brush.

Altitude	Chs.	
9275 ft.	67.35	On River bluff bears N. W. and S. E. Descend very steep E. slope in dense aspen and willow brush.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 18 lks. position of middle point.
		By 1st set 80.09 chs.
8850 ft.	80.00	By 2nd set 79.91 chs.; the mean of which is N. 3 lks.—Correction 336 lks. S. = S. 333 lks. from the tangent, Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 139th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M., on S. and 138 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the cor. Pits impracticable. This cor. stands on a little spur slope S. E. about 75 ft. above river bottom.
[fol. 163]		An aspen tree 5 ins. dia. bears N. 32½° E. 53 lks. dist. marked Colo., 138 M., B. T. An aspen tree 5 ins. dia. bears N. 56½° E. 73 lks. dist. marked N. M., 138 M., B. T. An aspen tree 5 ins. dia. bears S. 60° W. 18 lks. dist. marked N. M., 138 M., B. T. An aspen tree 5 ins. dia. bears N. 7° W. 32 lks. dist. marked Colo., 158 M., B. T. Land, mountainous, rough and broken. Soil, rocky, clay loam, 3rd rate. Vegetation, grass; spruce and pine timber; oak, willow and aspen brush. Alt. 8850 ft. Temp. 75°.

139th Mile

		S. 89° 59' E. on the tangent to the parallel. Descend.
	4.00	Foot of bluff about 500 ft. high, bears N. W. and S. E.; thence across river bottom.
8750 ft.	13.00	Chama River, 75 lks. wide, clear water, 2 ft. deep, course S. E. Altitude 8750 ft.; ascend.
	17.00	Top of low bluff, about 50 ft. above water, bears N. W. and S. E. thence along S. slope.
	55.00	On high spur slope S. about 250 ft. above last cor.; descend.
	70.00	Bottom of broad ravine, stream 10 lks. wide, course S. about 200 ft. below top of spur.

Altitude	Chs.	
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is
8900 ft.	80.00	This point comes on S. slope in dense brush. Advance this cor.
		Land, mountainous.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass, sage; scattering pine and aspen timber; dense oak and aspen brush.

140th Mile

		S. 89° 58′ E. on the tangent to the parallel.
[fol. 164]		Ascend in dense oak brush.
	5.00	Top of spur slope S.; descend.
	10.00	Stream 3 lks. wide, course S. W.
9500 ft.	39.77	On sharp spur slope S. W.
		Difference between measurements of 39.77 chs. by 2 sets of chainmen is 12 lks. position of middle point
		By 1st set 39.83 chs.
		By 2nd set 39.71 chs.; the mean of which is 39.77 chs.
		N. 9 lks.—Correction 367 lks. S. = S. 358 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 139th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 139.497 M. stamped in the center. Raised a mound of stone 3 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 6 ins. dia. bears N. 26° E. 59 lks. dist. marked Colo., 139.497 M., B. T.
		An aspen tree 6 ins. dia. bears N. 21½° W. 77 lks. dist. marked Colo., 139.497 M., B. T.
		No tree on S. side suitable for bearing trees.
		S. face of rock cliff bears S. 77½° E.
		First sharp peak on range bears N. 68½° W.
		Alt. 9500 ft.
		Temp. 75°.
		Descend.
	42.00	Bottom of ravine 50 ft. deep, stream 2 lks. wide, course S. W.; ascend.
	51.00	Top of spur slope S. W.; descend.
	62.00	Bottom of ravine 50 ft. deep, stream 5 lks. wide, course S. W.; ascend steep rocky W. slope.

Altitude	Chs.	
		Difference between measurements of 40.23 chs. by 2 sets of chainmen is 10 lks., position of middle point
		By 1st set 40.28 chs.
		By 2nd set 40.18 chs.; the mean of which is 40.23 chs. + 39.77 chs. =
9900 ft.	80.00	N. 12 lks.—Correction 378 lks. S. = 366 lks. from the tangent.
[fol. 165]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 140th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 140 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		An aspen tree 6 ins. dia. bears N. 68° E. 51 lks. dist. marked Colo., 140 M., B. T.
		An aspen tree 5 ins. dia. bears S. 32° E. 53 lks. dist. marked N. M., 140 M., B. T.
		An aspen tree 5 ins. dia. bears S. 35° W. 31 lks. dist. marked N. M., 140 M., B. T.
		An aspen tree 5 ins. dia. bears N. 37½° W. 73 lks. dist. marked Colo., 140 M., B. T.
		Land, mountainous.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, grass; scattering spruce and aspen timber; dense aspen brush.
		Alt. 9900 ft.
		Temp. 70°.

141st Mile

		S. 89° 57′ E. on the tangent to the parallel. Ascend in aspen timber and brush.
	5.00	Top of high spur slope S.; thence descend gradually along S. slope.
		Thence by stadia measurement,
		Angle 5° +, Rod 10.00 double = 2000 ft. × .9924 = 1984.80 ft. + C. = 1.14 ft. = 1985.94 ft. = 30.09 chs. + 5.00 chs. = 35.09 chs.
	15.00	Small lake about 3 chs. wide extends about 2 chs. N. and 5 chs. S.
	25.00	Foot of hill bears N. W. and S. E.; ascend.
10000 ft.	34.00	Top of spur slope S. Altitude 10000 ft.; descend.
	35.09	Stadia point, thence by tape measurement,
	55.23	Post by R. R. track near switch at Cresco, marked C. on N., 191 M. on E. and N. M. on S., supposed to be Darling's 191st mile cor., restored by

Altitude	Chs.	
[fol. 166]		Mr. F. M. Johnson in 1900 or 1901 bears S. 40 93 chs. dist. West of this point I failed to find any of the Darling corners I could identify, since leaving his 243rd mile, west of the San Juan River.
		Descend along steep S. slope.
9700 ft.	80.00	Comes in bottom of ravine, stream 2 lks. wide, course S. (The stream that supplies the R. R. tanks at Cresco switch about 30 chs. South.) Impracticable to establish the corner at this point.
		Land, mountainous, rough and broken.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, grass; spruce and aspen timber; oak and aspen brush.

142nd Mile.

		S. 89° 57' E. on the tangent to the parallel. Ascend over broken S. slope.
		Difference between measurements of 62.31 chs. by 2 sets of chainmen is 14 lks., position of middle point
		By 1st set 62.38 chs.
		By 2nd set 62.24 chs.; the mean of which is 62.31 chs. + 30.09 chs. = 92.40 chs. — 80.00 chs. = 12.40 chs. on 142nd mile.
9700 ft.	12.40	N. 20 lks.—Correction 402 lks. S. = S. 382 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 141st mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 141.155 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 16 ins. dia. bears N. 52° E. 215 lks. dist. marked Colo., 141.155 M., B. T.
		A spruce tree 24 ins. dia. bears S. 17½° W. 120 lks. dist. marked N. M., 141.155 M., B. T.
		No other trees within limits suitable for bearing trees.
[fol. 167]		This cor. stand on sharp ridge slope S. about ½ mile North-easterly from the D. & R. G. R. R. tank at Cresco.
		Alt. 9700 ft.
		Temp. 70°.

July 15th, 1902.

Altitude	Chs.	
		I examine the transit, compare the steel tapes with the standard and find all correct and in adjudgment.
		Thence along S. slope through timber and brush, crossing gulches and ridges.
	50.00	On spur slope S. about 400 ft. above last cor.
	62.70	On high bluff bears N. and S. Offset 4.57 chs. N. to avoid Wolf Creek Canon thence S. 89° 57' E. parallel to tangent and 4.57 chs. N. of it, on offset line.
	78.30	Wagon road, Cumbres to Chama, bears N. E. and S. W.
		Difference between measurements of 67.60 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 67.63 chs.
		By 2nd set 67.57 chs.; the mean of which is 67.60 chs. + 12.40 chs.=
9710 ft.	80.00	Comes in D. & R. G. R. R. cut N. of track.
		This offset line is 4.57 chs. N. of the tangent, true place for this cor. N. 27 lks.—Correction 420 lks. S. = S. 393 lks. from the tangent + 4.57 lks. = 850 lks. N. of the true place for this corner which falls in Wolf Creek Canon and is inaccessible. Therefore I establish a witness corner at this point 850 lks. N. of the true place for the corner.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for witness cor. for 142nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and W. C., 142 M., stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable, in R. R. cut.
[fol. 168]		An aspen tree 5 ins. dia. bears N. 20° 40' E. 33 lks. dist. marked Colo., W. C. 142 M., B. T.
		An aspen tree 6 ins. dia. bears S. 86° 50' E. 102 lks. dist. marked W. C., N. M., 142 M., B. T.
		A cross on black volcanic rock bears S. 37° 20' E. 39 lks. dist. Rock 4 x 6 x 10 ft. above ground marked + N. M., W. C. 142 M., B. O.
		An aspen tree, 5 ins. dia. bears N. 73° 40' W. 110 lks. dist. marked W. C., Colo., 142 M., B. T.
		Land mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, grass; spruce, pine and aspen timber; oak and aspen brush.
		Alt. 9710 ft.
		Temp. 60°.

143rd Mile

Altitude	Chs.	
		S. 89° 56' E. on offset line parallel with the tangent.
	0.35	D. & R. G. R. R. track bears N. E. and S. W.
	1.00	Stadia measurement.
		Angle 2° +, Rod 9.20 single = 920 ft. × .9988 = 918.90 ft. + C. = 1.15 ft. = 920.05 ft. = 13.94 chs. + 1.00 ch. = 14.94 chs.
	8.00	Bottom of Wolf Creek Canon, about 20 ft. deep, stream 40 lks. wide, course S. W.; ascend.
	14.94	Stadia point, thence by tape measurement.
	25.00	Set back S. 4.57 chs. to the tangent line thence S. 89° 56' E. on the tangent to the parallel.
		Leave timber, bears N. W. and S. E.
	33.90	Spur slope N.
	54.00	Enter timber bears N. E. and S. W.
	75.00	Leave timber bears N. E. and S. W. Foot of Cumbres or Conejos Range bears N. E. and S. W.; ascend.
		Difference between measurements of 65.06 chs. by 2 sets of chainmen is 8 lks. position of middle point.
[fol. 169]		By 1st set 65.10 chs.
		By 2nd set 65.02 chs.; the mean of which is 65.06 chs. + 14.94 chs. =
9850 ft.	80.00	N. 37 lks. — Correction 441 lks. S. = S. 404 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 143rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 143 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A spruce tree 7 ins. dia. bears S. 32° 15' E. 46 lks. dist. marked N. M., 143 M., B. T.
		A spruce tree 7 ins. dia. bears S. 83° 15' W. 78 lks. dist. marked N. M., 143 M., B. T.
		No other trees within limits suitable for bearing trees.
		A point of black lava rock bears N. 79° E. about 12 chs. dist.
		Land, mountainous.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, grass; spruce and aspen timber; aspen, alder and willow brush.
		Alt. 9850 ft.
		Temp 66°.

144th Mile

Altitude	Chs.	
		S. 89° 55′ E. on the tangent to the parallel. Ascend steep rocky W. slope of mountain. Stadia measurement.
		Angle 20′ +, Rod 12.80 single = 1280 ft. × .8830 = 1130.24 ft. + C. = 1.08 ft. = 1131.32 ft. = 17.14 chs.
	17.14	Stadia point, thence by tape measurement, over rolling rocky hills.
10500 ft.	50.00	Summit of Conejos Range, bears N. and S. Alt. 10500 ft. Cumbres station on D. & R. G. R. R. at Cumbres Pass about 1½ miles N. Descend through scattering timber, with much dead and fallen timber.
[fol. 170]		Difference between measurements of 62.86 chs. by 2 sets of chainmen is 6 lks. position of middle point. By 1st set 62.89 chs. By 2nd set 62.83 chs.; the mean of which is 62.86 chs. + 17.14 chs. = N. 49 lks. — Correction 462 lks. S. = S. 413 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 144th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. an S. and 144 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. No trees within limits. This cor. stands on a little flat or basin. Land, mountainous. Soil, sand and clay, 3rd rate. Vegetation, grass; spruce and aspen timber; much dead and fallen timber. Alt. 10300 ft. Temp. 70°.

145th Mile

		S. 89° 55′ E. on the tangent to the parallel. Descending gradually.
	4.00	Stream 5 lks. wide, course N. E.; ascend.
	8.00	Enter timber bears N. W. and S. E.
	25.00	Top of spur slope N. 150 ft. above cor.; descend.
	46.00	Bottom of ravine 100 ft. deep, course N. W.; ascend.
	60.00	Top of spur slope N.; descend.

Altitude	Chs.	
	77.00	Stream 6 lks. wide, course N. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
10000 ft.	80.00	N. 42 lks. — Correction 483 lks. S. = 421 lks. from the tangent.
[fol. 171]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 145 mile cor. A brass cap on top of the pipe has raised letters. Colo. on N., N. M. on S. and 145 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A spruce tree 16 ins. dia. bears N. 85° E. 152 lks. dist. marked Colo., 145 M., B. T.
		A spruce tree 12 ins. dia. bears S. 58° 45′ E. 37 lks. dist. marked N. M., 145 M., B. T.
		A spruce tree 10 ins. dia. bears S. 61¼° W. 236 lks. dist. marked N. M., 145 M., B. T.
		A spruce tree 10 ins. dia. bears N. 36¼° W. 96 lks. dist. marked Colo., 145 M., B. T.
		This cor. stands on E. bank of creek about 30 ft. above the water.
		Land, mountainous.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass, sage; spruce and aspen timber; and brush.
		Alt. 10000 ft.
		Temp. 70°.

146th Mile

		S. 89° 54′ E. on the tangent to the parallel. Ascend in spruce timber.
	25.00	Top of spur, about 150 ft. high slope N.
	38.00	Bottom of gulch, course N.; ascend.
	50.00	Top of spur 100 ft. high slope N.; descend.
	65.00	Leave timber bears N. and S.; descend E. slope.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is
9700 ft.	86.00	N. 76 lks.—Correction 504 lks. S. = S. 428 lks. from the tangent,

Altitude . Chs

Set an iron pipe 3 ins. dia. 4 ft long with flanges at the bottom 2 f. in the ground for 146th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 146 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

[fol 172]

Pits impracticable.
No trees within limits.
This cor. stands in a little hollow.
Land, mountainous.
Soil, sandy and rocky, 3rd rate.
Vegetation, grass, sage, scattering spruce and aspen timber, with some dead and fallen timber.
Alt. 9700 ft.
Temp. 65°.

July 16th, 1903.

I examine the transit, compare the steel tapes with the standard and find all correct, and in adjustment.

147th Mile

S. 89° 53' E. on the tangent to the parallel.
Descending gradually across little valley.

8.00 Stream 5 lks. wide, course N. E.; ascend.

9750 ft. 16.00 Top of rocky spur slope N. in scattering timber.
Descend along N. slope.

56.00 Foot of hills. Enter valley of the Pinos, bears N. W. and S. E. Leave timber bears N. W. and S. E.

Difference between measurements of 80.06 chs. by 2 sets of chainmen is 6 lks. position of middle point.
By 1st set 80.03 chs.
By 2nd set 79.97 chs.; the mean of which is

9450 ft. 80.00 N. 92 lks.—Correction 525 lks. S. = S. 433 lks. from the tangent,

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 147th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 147 M. stamped in center. Dug pits 36 x 36 x 18 ins.

[fol. 173]

N. S., and E. of the cor. 6 ft. dist. The place for pit on W. side, a shallow pond, pit impracticable. Raised a mound of earth 5 ft. base 2 ft. high around the post.
A cliff of rock bears N. 25° E. about 1 mile dist.

Altitude	Chs.	
		A sharp point of rock bears N. 51° 45′ E. about 1 mile dist.
		This cor. stands on creek bottom about 6 chs. S. of Rio Los Pinos
		Land, mountainous.
		Soil, sandy, and clay loam, 2nd rate.
		Vegetation, grass, sage, scattering spruce and aspen.
		Alt. 9450 ft.
		Temp. 68°.

148th Mile

		S. 89° 53′ E. on the tangent to the parallel.
		Along creek bottom.
	60.00	Stream 5 lks. wide, course N. E.
	70.00	Foot of bluff bears N. E. and S. W.; ascend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
9569 ft.	80.00	No. 110 lks.—Correction 546 lks. S. = S. 436 lks. from the tangent.
		Set an iron pipe 3 ins. dia., 4 ft. long with flanges at the bottom 2 ft. in the ground for 148th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 148 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limits.
		This cor. stands on steep rocky N. W. slope.
		Land, mostly valley.
		Soil, sandy and rocky, 2nd rate.
[fol. 174]		Vegetation, grass and sage.
		Alt. 9500 ft.
		Temp. 70°.

149th Mile

		S. 89° 52′ E. on the tangent to the parallel.
		Ascend over steep broken rock.
		Stadia measurement.
		Angle 18° +. Rod 11.39 single = 1150 ft. × .9045 = 1040.18 ft. + C = 1.93 ft. = 1041.27 ft. = 15.77 chs.
	15.77	Stadia point on top of rock cliffs, about 350 ft. above creek bears N. E. and S. W. Thence by tape measurement along N. slope. Enter scattering timber bears N. E. and S. W.

Altitude	Chs.	
	68.00	Top of spur, slope N.
		Difference between measurements of 64.23 chs. by 2 sets of chainmen is 4 lks. position of middle point
		By 1st set 64.25 chs.
		By 2nd set 64.21 chs.; the mean of which is 64.23 chs. + 1.77 chs. =
9810 ft.	80.00	N. 129 lks. — Correction 567 lks. S. = S. 438 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 149th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 149 M. stamped in the center. Raised a mound of stone 2 ft. base 2 ft. high around the post.
		Pits impracticable.
		An aspen tree 6 ins. dia. bears N. 72½° E. 116 lks. dist. marked Colo., 149 M., B. T.
		An aspen tree 10 ins. dia. bears S. 24° E. 79 lks. dist. marked N. M., 149 M., B. T.
		An aspen tree 5 ins. dia. bears S. 62° W. 80 lks. dist. marked N. M., 149 M., B. T.
		An aspen tree 5 ins. dia. bears N. 51¼° W. 24 lks. dist. marked Colo., 149 M. B. T.
		Land, mountainous.
		Soil, rocky, clay loam, 3rd rate.
[fol. 175]		Vegetation, grass, sage, aspen and scattering spruce timber; aspen brush.
		Alt. 9810 ft.
		Temp. 70°.

150th Mile

		S. 89° 52' E. on the tangent to the parallel.
		Ascend gradually in aspen timber.
	3.50	Top of hill bears N. W. and S. E.; descend.
	30.00	Leave timber bears N. W. and S. E.
	55.00	On bluff bears N. W. and S. E.; descend.
9200 ft.	64.66	Rio Los Pinos, 60 lks. wide, course S. E. Alt. 9200 ft.
		Ascend along S. slope.
	75.00	Brooks 3 lks. wide, course S. W.; ascend steep.
	80.00	Comes on very steep W. slope in sliding rock.
		Impracticable to establish permanent cor. at this point.
		Land, mountainous.
		Soil, rocky, 3rd rate.
		Vegetation, grass, sage, scattering aspen timber; aspen brush.

151st Mile

Altitude	Chs.	
		S. 89° 51′ E. on the tangent to the parallel.
	5.70	D. & R. G. R. R. track bears N. and S. E.
	6.00	Perpendicular wall rock cutting about 30 ft. high.
		Difference between measurements of 87.00 chs. by 2 sets of chainmen is 16 lks. position of middle point
		By 1st set 87.08 chs.
		By 2nd set 86.92 chs.; the mean of which is 87.00 chs. — 70.00 chs. = 7.00 chs. on 151st mile.
9520 ft.	7.00	N. 152 lks. — Correction 590 lks. S. = S. 438 lks. from the tangent.
		Set an iron post 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 150th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 150.087 M.
[fol. 176]		stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A spruce tree 10 ins. dia. bears S. 11½ E. 83 lks. dist. marked 150.087 M., N. M., B. T.
		A spruce tree 18 ins. dia. bears N. 32° W. 55 lks. dist. marked Colo. 150.087 M., B. T.
		No other trees within limits suitable for bearing trees.
		The upper end of Tojtee Gorge about 1 mile S. E. Darling's 6th Astronomical station bears S. 1° W. 38.80 chs. dist. I destroyed this cor. and succeeded in finding and destroying all his corners from this point W. to the 191st mile cor. previously mentioned, except his 182nd, 189th and 190th mile corners, which I failed to find.
		Thence ascend through dense aspen brush.
10000 ft.	70.00	On top of high spur slope S. Alt. 10000 ft. descend.
		Difference between measurements of 73.00 chs. by 2 sets of chainmen is 12 lks., position of middle point
		By 1st set 73.06 chs.
		By 2nd set 72.94 chs.; the mean of which is 73.00 chs. + 7.00 chs. =
9950 ft.	80.00	N. 472 lks. — Correction 609 lks. S. — S. 437 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 151st mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 151 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs.	
		Pits unpracticable.
		An aspen tree 8 ins. dia. bears S. 11° E. 200 lks. dist. marked N. M., 151 M., B. T.
		An aspen tree 10 ins. dia. bears S. 15° W. 200 lks. dist. marked N. M., 151 M., B. T.
		No trees within limits on other side.
[fol. 177]		Land, mountainous.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, grass; aspen, scattering spruce timber; dense aspen brush.
		Alt. 9,950 ft.
		Temp. 70°.

July 17th, 1903.

On morning of Dec. 3rd, 1902, at 2h 31m A. M. l. m. t., having carefully adjusted the transit in all its parts at the 151st mile cor. I observe Polaris at Western elongation, and mark a point on the line so found on a plug driven in the ground N. of my station.

At 7h 50m A. M. Dec. 3rd, I lay off the azimuth of Polaris 1° 31.1′ to the East and mark a point in the true meridian on a plug driven in the ground N. of my station.

The magnetic bearing of said meridian is N. 13° 45′ W.

This gives the magnetic variation 13° 45′ E. I now lay off an angle 90° from the meridian, from the N. to the E. for the tangent to the parallel.

In these observations and the subsequent turning of angles the mean of four sights was used with telescope reversed at each sight.

July 18th, 1903.—I examine the transit, compare the steel tapes with the standard and find all correct and in adjustment.

152nd Mile

		East on the tangent to the parallel.
		Descend through dense aspen brush.
	71.00	D. & R. G. R. R. bears N. and S.; about 10 chs. N. to Toltec section house.
9350 ft.	80.00	Comes in dense brush in deep ravine, about 600 ft. below last corner. I advance this corner.

Altitude	Chs.	
		Land, mountainous.
[fol. 178]		Soil, rocky, clay and sand, 3rd rate.
		Vegetation, grass; aspen timber; aspen and oak brush.

153rd Mile.

		S. 89° 59' E. on the tangent to the parallel.
		Descend in dense brush.
	1.00	Stream 5 lks. wide, course S. E.; ascend.
		Difference between measurements of 96.00 chs. by 2 sets of chainmen is 20 lks., position of middle point.
		By 1st set 96.10 chs.
		By 2nd set 95.96 chs.; the means of which is 96.00 chs.— 80.00 chs.= 16 chs. on 153rd mile.
9450 ft.	16.00	N. 1 lk.—Correction 634 lks. S.= S. 633 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 152nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N. N. M., on S. and 152.2 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		This cor. stands in S. side of D. & R. G. R. R. cut. A spruce 5 ins. dia. bears N. 43° 50' W. 160 lks. dist. marked Colo., 152 M., B. T.
		No other trees within limits suitable for bearing trees.
	16.25	Center of D. & R. G. R. R. track bears N. W. and S. E.; ascend in dense brush and scattering timber.
10000 ft.	36.00	Top of high bluff bears N. W. and S. E. Elevation 10,000 ft.
		Enter aspen timber; descend gradually.
		Difference between measurements of 64.00 chs. by 2 sets of chainmen is 14 lks., position of middle point.
		By 1st set 64.07 chs.
		By 2nd set 63.93 chs.; the mean of which is 64.00 chs. + 16.00 chs.=
9920 ft.	80.00	N. 3 lks.—Correction 651 lks. S.= S. 648 lks. from the tangent.
[fol. 179]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 153rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N. N. M. on S. and 153 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs.	
		Pits impracticable.
		An aspen tree 6 ins. dia. bears 34½° E. 48 lks. dist. marked Colo., 153 M., B. T.
		An aspen tree 6 ins. dia. bears S. 72° E. 68 lks. dist. marked N. M., 153 M., B. T.
		An aspen tree 6 ins. dia. bears S. 2¼° W. 180 lks. dist. marked N. M., 153 M., B. T.
		An aspen tree 5 ins. dia. bears N. 73° W. 95 lks. dist. marked Colo., 153 M., B. T.
		Land, mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, grass; aspen, scattering spruce timber; aspen brush.
		Alt. 9,920 ft.
		Temp. 70°.

154th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Descending gradually through aspen timber.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks position of middle point
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
9850 ft.	80.00	N. 7 lks.—Correction 672 lks. S.=S. 665 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 154th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 154 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
[fol. 180]		Pits impracticable.
		This cor. stands among dead aspen poles, on gentle N. W. slope.
		An aspen tree 6 ins. dia. bears North 15 lks. dist. marked Colo., 154 M., B. T.
		An aspen tree 6 ins. dia. bears S. 54° 20′ W. 153 lks. dist. marked N. M., 154 M., B. T.
		No other tree within limit suitable for bearing tree.
		Land, sloping gently to the N. and N. W.
		Soil, clay loam, 3rd rate.
		Vegetation, aspen timber and brush
		Alt. 9,850 ft.
		Temp. 75°.

Altitude	Chs.	
		155th Mile
		S. 89° 58′ E. on the tangent to the paralled.
		Descending along N. slope in timber and brush.
	73.00	Bottom of ravine, course N.
	77.00	On ridge bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is
9650 ft.	80.00	N. 12 lks.—Correction 693 lks. S. = S. 681 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 155th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 155 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine tree 24 ins. dia. bears N. 15° E. 161 lks. dist. marked Colo., 155 M., B. T.
		A spruce tree 24 ins. dia. bears S. 23½° W. 291 lks. dist. marked N. M., 155 M., B. T.
		No other trees within limit suitable for bearing trees.
[fol 181]		Land, mountainous.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, grass; aspen, scattering pine and spruce timber; aspen brush.
		Alt. 9,650 ft.
		Temp. 75°.

		156th Mile
		S. 89° 57′ E. on the tangent to the paralled.
		Descend over rolling hills, along N. slope through timber and brush.
9540 ft.	74.00	Top of ridge bears N. E. and S. W.; descend, leave timber, bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks., position of middle point
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is
9440 ft.	80.00	N. 19 lks.—Correction 714 lks. S. = S. 695 lks. from the tangent.

Altitude Chs

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 156th mile cor. A brass cap on top of the pipe has raised letters Colo. on N. N. M. on S. and 156 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
Pits impracticable.
This cor. stands on open N. E. slope near head of little gulch that runs S. E.
A yellow pine tree 18 ins. dia. bears N. 64° 37' E. 167 lks. dist. marked Colo., 156 M. B. T.
A yellow pine tree 18 ins. dia. bears S. 35° E. 312 lks. dist. marked N. M., 156 M., B. T.
No other trees within limits.
Land, mountainous.
Soil, clay loam, 3rd rate.
Vegetation, grass; spruce and pine and aspen timber, oak and aspen brush.
Alt. 9,440 ft.
Temp. 77.

July 18th, 1903.

[fol. 182] I examine and carefully adjust the transit, compare the steel tapes with the standard and find them of correct length.

157th Mile

S. 89° 57' E. on the tangent to the parallel.
Descend.

8.00 Bottom of ravine about 75 ft. below cor. course N. E.; ascend over N. slopes.

40.00 Top of spur, slope N. about 50 ft. high.

9160 ft. 72.00 Bottom of ravine, stream 2 lks. wide, course N. ascend.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point.

By 1st set 80.06 chs.

By 2nd set 79.94 chs., the mean of which is

9210 ft. 80.09 N. 27 lks.—Correction 735 lks. S.—S. 708 lks. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 157th mile cor. A brass cap on top of the pipe has raised letters Colo. on N. N. M. on S. and 157 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs	
		Pits impracticable
		This cor. stands in a little gap or saddle, on the top of a ridge that bears NE. and SW
		A pine tree 18 ins. dia. bears N. 44½ E. 74 lks. dist. marked Colo. 157 M., B. T.
		A pine tree 12 ins. dia. bears S. 10½ E. 173 lks. dist. marked N. M., 157 M., B. T.
		No other trees within limits.
		Land, mountainous.
		Soil, rocky, 3rd rate.
		Vegetation, grass, pine, spruce and aspen timber, oak and aspen brush.
		Alt. 9230 ft.
		Temp. 65°.

[fol. 183] 158th Mile

		S. 89° 56' E. on the tangent to the parallel. Ascending through brush and scattering timber.
	23.00	Bottom of dry ravine, 50 ft. deep, course N. E., ascend.
	36.00	Top of spur, slope N. E., descend.
	44.00	Bottom of ravine, 50 ft. deep, course N. E.
	50.00	Top of spur, about 50 ft. above gulch, slope N. E.
	72.00	Bottom of ravine, course N., water in head of it about ½ mile S. of line; ascend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 90 lks., position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs., the mean of which
9130 ft.	80.00	N. 37 lks.—Correction 750 lks. S. = S. 713 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground for 158th mile cor. Alibrass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 158 M. stamped in the center. Raised a mound of stone 6 ft. base 2 ft. high around the post.
		Pits impracticable.
		This cor. stands on W. slope about 15 ft. above bottom of ravine.
		A yellow pine tree 18 ins. dia. bears N. 17° E. 198 lks. dist. marked Colo., 158 M., B. T.
		A yellow pine tree 18 ins. dia. bears S. 37° E. 284 lks. dist. marked N. M., 158 M., B. T.
		A yellow pine tree 18 ins. dia. bears S. 71½ W. 73 lks. dist. marked N. M., 158 M., B. T.
		A yellow pine tree 18 ins. dia. bears N. 32° W. 198 lks. dist. marked Colo., 158 M., B. T.

Altitude	Chs.	
		Land, mountainous. Soil, sand and clay, rocky, 3rd rate. Vegetation, grass; scattering pine, spruce and aspen timber; oak and aspen brush.
[fol. 184]		Alt. 9200 ft. Temp. 75

159th Mile

		S. 89° 55' E. on the tangent to the parallel; ascend.
9350 ft.	24.00	Top of bluff bears N. W. and S. E. Lava rim about 220 ft. above the cor.
		Thence across high mesa, scattering timber.
9350 ft.	60.00	Top of wall, lava rim bears N. W. and S. E.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen = 14 lks, position of middle point
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs., the mean of which is
9200 ft.	80.00	N. 49 lks.—Correction 777 lks. S. = S. 728 lk. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 159th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 159 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine tree 16 ins. dia. bears S. 4° 10' E. 187 lks. dist. marked N. M., 159 M., B. T.
		A yellow pine tree 16 ins. dia. bears N. 0° 45' W. 353 lks. dist. marked Colo., 159 M., B. T.
		No other trees within limits suitable for bearing trees.
		Land, mountainous.
		Soil, sand and clay, rocky, 3rd rate.
		Vegetation, grass; scattering pine, spruce and aspen timber; oak and aspen brush.
		Alt. 9200 ft.
		Temp. 75°.

[fol. 185]

160th Mile

		S. 89° 55' E. on the tangent to the parallel. Along N. slope in dense brush and scattering timber.

Altitude	Chs	
9250 ft.	50.00	Top of wall lava rim bears N. E. and S. W. about 50 ft. above last corner, thence across lava mesa
	70.19	D. & R. G. R. R. track bears N. E. and S. W. about ¼ mile N. of Big Horn section house.
		Difference between measurements of 80.00 chs by 2 sets of chainmen is 16 lks. position of middle point
		By 1st set 80.08 chs.
		By 2nd set 79.92 chs., the mean of which is
9200 ft.	80.00	N. 62 lks.—Correction 798 lks. S. = S. 736 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 160th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 160 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limits.
		This corner stands on lava mesa, near center of parquette made by D. & R. G. R. R. to gain grade.
		Land, broken and rock.
		Soil, clay and volcanic ash, 3rd rate.
		Vegetation, soap-weed; scattering pine, spruce and aspen timber; and aspen brush.
		Alt. 9200 ft.
		Temp. 80°.

161st Mile

		S. 89° 34' E. on the tangent to the parallel. Descending gradually over lava mesa.
	10.08	Center of D. & R. G. R. R. track bears N. E. and S. W.
	37.00	Leave scattering timber, bears N. and S.
[fol. 186]		Difference between measurements of 80.00 chs by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs., the mean of which is
9050 ft.	80.00	N. 76 lks.—Correction 819 lks. S. = S. 743 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 161st mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 161 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.

Altitude	Chs.	
		W. edge of timber on peak bears N. 22½° W. about 5 miles dist. Sharp timbered peak bears E. 71° 20′ W. about 2 miles dist. Top of Ute Peak bears S. 78½° E. about 25 miles dist. Land, volcanic mesa. Soil, sand, clay, volcanic ash, 4th rate. Vegetation, soap-weed; scattering pine and pinon. Alt. 9050 ft. Temp. 75°.

July 19th, 1903.

I examine the instrument and compare the steel tapes with the standard, find all correct and in adjustment.

162nd Mile

		S. 89° 53′ E. on the tangent to the parallel. Descend gradually over mesa.
9000 ft.	22.00	Top of lava wall, or rim, bears N. E. and S. W. Leave mesa; descend, enter scattering pinon and cedar bears N. E. and S. W.
8660 ft.	48.00	Foot of slope dry gulch, course N. E. and about 300 ft. below top of bluff; ascend.
	49.00	Darling's 170th mile cor. bears S. 32.90 chs. dist., a lava stone 15 x 10 x 8 ins. set in a pile of rock,
[fol. 187]		marked C. on N., 170 on E., N. M. on S. and .68 W. I destroyed this corner.
		Ran West from this point.
		80.30 chs.—Darling's 171st mile cor. 10 lks. S. A lava stone 14 x 10 x 7 ins. in a pile of stone, marked C. on N., 171 on E., N. M. on S. and .68 on W. I destroyed this cor.
		Ran West.
		80.00 chs.—Failed to find Darling's 172nd mile cor. and failed to find any more of the Darling corners till I reach his 6th Astronomical Station, on his 182nd mile, W. of Toltec Gorge, previously described. I now run East from the site of Darling's 170th mile corner and make search at each mile, but fail to find any corners, till I reach his 165th mile cor., near our Astronomical Station No. 4,—a lava stone 14 x 10 x 8 ins. marks illegible.
	57.60	Wagon road, Antonito to Big Horn Station, bears N. E. and S. W.

Altitude	Chs.	
8650 ft.	60.00	Top of hill bears N. E. and S. W. Thence over gently rolling hills. Difference between measurements of 80.00 chs. by 2 sets of chainmen is 16 lks. position of middle point. By 1st set 80.08 chs. By 2nd set 79.92 chs.; the mean of which is
8650 ft.	80.00	N. 92 lks.—Correction 840 S. = S. 748 lks. from the tangent, Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 162nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., . . M. on S. and 162 M. Stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. Land, mesa and rolling. Soil, sandy and volcanic ash, 3rd rate. Vegetation, grass, sage, soapweed; scattering cedar and pinon. [64 188] Alt. 8650 ft. Temp. 65°.

163rd Mile

S. 89° 53' E. on the tangent to the parallel.
Over gently rolling land.

	57.90	Center of D. & R. G. R. R. track bears N. 51° E. for about 20 chs., then curves to N. and S. 51° W. about 6 chs. then curves to the S.
		Difference between measurements of 80 chs. by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 80.05 chs.
8420 ft.	80.00	By 2nd set 79.95 chs.; the mean of which is N. 110 lks.—Correction 861 lks. S. = S. 751 lks. from the tangent,
		Set temporary cor. See page 419.
		Land, rolling.
		Soil, sandy, 3rd rate.
		Vegetation, grass, scrub pinon, both N. and S. of this line.
		Alt. 8420 ft.
		Temp. 70°.

164th Mile

S. 89° 52' E. on the tangent to the parallel.
Descending gradually across little valley that bears N. E. and S. W.

Altitude	Chs.	
8400 ft.	64.00	Foot of bluff that bears N. E. and S. W. Leave valley, ascend.
	80.00	Comes on W. slope of bluff. I advance this cor. Land, mostly valley. Soil, sandy, 3rd rate. Vegetation, grass, sage and scattering pinon.

165th Mile

S. 89° 52' E. on the tangent to the parallel. Ascend.

	4.00	Brow of bluffs bears N. E. and S. W. Ascend gradually.
[fol. 189]		Difference between measurements of 88.00 chs. by 2 sets of chainmen is 10 lks., position of middle point. By 1st set 88.05 chs., By 2nd set 87.95 chs., the mean of which is 88.00 chs.,—80.00 chs. = 8.00 chs. on the 165th mile.
8500 ft.	8.00	N. 131 lks.—Correction 884 lks. S. = S. 753 lks. from the tangent. Set temporary cor. Alt. 8500 ft. Temp. 75°. Thence across lava mesa.
8500 ft.	26.00	E. edge of mesa bears N. E. and S. W. Descend.
	44.00	Foot of bluff about 250 ft. high bears N. E. and S. W.
	44.23	Wagon road bears N. 37° E. and S. 37° W. Descend gradually.
	44.50	Fence bears N. E. and S. W.
	47.15	Irrigating ditch, course N. E. Enter cultivated field bears N. E. and S. W. Difference between measurements of 72.00 chs. by 2 sets of chainmen is 6 lks. position of middle point. By 1st set 72.03 chs.; By 2nd set 71.97 chs.; the mean of which is 72.00 chs + 8.00 chs. =
8200 ft.	80.00	N. 150 lks.—Correction 903 lks. S. = S. 753 lks. from the tangent. Set temporary cor. This cor. stands in a cultivated field. Land, high table and valley. Soil, 2nd and 3rd rate. Vegetation, grass, sage and wheat, alfalfa and pease. Alt. 8200 ft. Temp. 80°.

Altitude	Chs.	
		166th Mile
[fol. 190]		S. 89° 54' E. on the tangent to the parallel. Across bottom land, through growing crops.
	17.60	Irrigating ditch 10 lks. wide, course N. E.
	40.00	A good house about 5 chs. N.
	65.00	Center of main street in Ortiz bears N. 25° W. and S. 25° E. about 10 chs. each way and jogs off to the E. at each end.
	67.00	S. W. cor. of Garcia's house, the largest house in Ortiz.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
8180 ft.	80.00	N. 172 lks.—Correction 924 lks. S. = S. 752 lks. from the tangent.
		Set temporary cor.
		This cor. stands in cultivated field.
		The point for this cor. was determined from the astronomical observations, and was located April 21st, 1903.
		Land, creek bottom.
		Land, gravelly loam, 2nd rate.
		Vegetation, cultivated crops, wheat, oats, corn, alfalfa pease and potatoes.
		Alt. 8180 ft.
		Temp. 80°.

July 20th, 1903.

On April 20th, I assembled the Surveying Corps at Antonito, Colorado.

April 21st proceed to Ortiz to our 4th Astronomical Station, where we left off work last December.

From the Astronomical observations made at this station on the nights of October 12, and 13th, 1902, I locate the 37th parallel of North Latitude and also locate a point on the boundary line within the limit of 3" of arc allowed by the Hon Commissioner, for the 166th mile cor.

I find the snow is still too deep on the Conejos and Navajo Ranges to admit making the required correction of the line from the 122nd cor. to this point.

[fol. 191] Therefore, that portion of the line was left till later in the season, as shown by the dates on the foregoing field notes.

Altitude	Chs.	
		April 22nd, 1903 at 5h 30m A. M. I. m. t. at the point for the 166th mile cor. I observe Polaris at Eastern elongation and mark a point in the line so determined on a pin driven in the ground N. of my station.
		At 6h 50m A. M. I. lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a pin driven in the ground north of my station.
		The magnetic bearing of the meridian is N. 13° 44′ W. This gives the magnetic variation 14° 44′ E.
		I now lay off an angle of 90° from the meridian from the N. to the E. for the tangent to the parallel. In all these observations and the subsequent turning of angles the mean of four sights was used with the telescope reversed at each sight.

167th Mile

		East on the tangent to the parallel.
		Along creek bottom and over cultivated land.
	33.27	W. edge of San Antonio Creek, 1 ch. wide, clear water, 2 ft. deep, course N. E.
	34.87	E. edge of creek bears N. E. and S. W.; bank 2½ ft. high, fringe of willow brush along creek.
	44.00	Point of lava hill from S. W.
	46.00	Mexican adobe about 1 ch. S.
	51.90	Our Astronomical station bears S. 26.90 chs. dist.
		The latitude of this station was found to be 36° 59′ 45.22″ = 22.64 chs. S. of true parallel. Our line is, therefore 4.26 chs. N. of the true parallel as determined by astronomical observations, but within the limits of 3″ of arc allowed by the Hon. Commissioner.
[fol. 192]		As this point comes in a cultivated field I advance the astronomical monument to the E. edge of it. (See page 421.)
8180 ft.	60.80	N. ½ lk. from the tangent.
		Set temporary astronomical monument.
		Leave cultivated land, bears N. and S.; ascend.
8260 ft.	64.14	Top of bluff on rimrock of black lava about 75 ft. high bears N. E. and S. W. Thence across lava mesa.
	77.90	Wagon road, bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.

Altitude	Ch.	
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.: the mean of which is
8260 ft.	80.00	N. .76 of a link from the tangent.
		Set temporary cor.
		Land, mesa and valley.
		Soil, gravelly loam and volcanic ash, 2nd and 4th rate.
		Vegetation, growing crops in valley; some grass and weeds on mesa.
		Alt. 8260 ft.
		Temp. 52°.

168th Mile

		S. 89° 59' E. on the tangent to the parallel.
		Over malpais or volcanic rock and sand.
	51.50	Darling's 164th mile cor. bears S. 29.00 chs. dist.
		A lava stone 16x10x8 ins. No mound of other witness.
		I destroy the marks.
		The Darling corners were found and destroyed from this point eastward to the foot of the Culebra Range.
		They consisted of lava stones from 16 to 24 ins. in length, other dimensions much the same as the 164th mile cor.
[fol. 193]		not witnessed in any way. They were generally well and distinctly marked.
	63.85	Wagon road, bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point,
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.: the mean of which is
8275 ft.	80.00	N. 3 lks. from the tangent,
		Set temporary cor.
		Land, lava mesa, gently rolling.
		Soil, sand and volcanic ash, 4th rate.
		Vegetation, a little grass and weeds, practically a desert.
		Alt. 8275 ft.
		Temp. 65°.

169th Mile

		S. 89° 59' E. on the tangent to the parallel
		Over volcanic mesa.

Altitude	Chs.	
	27.81	Center of D. & R. G. R. R. track bears N. and S. runs from Antonito to Santa Fe.
	70.00	Wagon road bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is nothing; the mean is
8250 ft.	80.00	N. 7 lks. from the tangent.
		Set temporary cor.
		Land, gently rolling, volcanic mesa.
		Soil, rocky and sandy, 4th rate.
		Vegetation, scanty, weeds and greasewood
		Alt. 8250 ft.
		Temp. 62°.

170th Mile

		S. 89° 58' E. on the tangent to the parallel.
	68.00	Hollow drains N. E., 30 ft. deep; ascend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
8200 ft	80.00	N. 12 lks. from the tangent.
[fol. 194]		Set temporary corner.
		Land, volcanic mesa.
		Soil, sandy and rocky, 4th rate.
		Vegetation, scanty, weeds and greasewood
		Alt. 8200 ft.
		Temp. 62°.

171st Mile

		S. 89° 57' E. on the tangent to the parallel.
		Over volcanic mesa.
	20.70	Wagon road, bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is
8120 ft.	80.00	N. 19 lks. from the tangent.
		Set temporary cor.
		Land, mesa.
		Soil, sandy and rocky, 4th rate.
		Vegetation, weeds and greasewood.
		Alt. 8120 ft.
		Temp. 66°.

Altitude	Chs.	
		172nd Mile
		S. 89° 57' E. on the tangent to the parallel. Over mesa.
	20.60	Wagon road bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs.; the mean of which is
8100 ft.	80.00	N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 172nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M., on S. and 172 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable.
[fol. 195]		No bearing.
		Land, nearly level, volcanic mesa.
		Vegetation, weeds and greasewood
		Alt. 8100 ft.
		Temp. 70°.
		173rd Mile
		S. 89° 56' E. on the tangent to the parallel.
		Over nearly level land.
		Difference between measurements of 80.03 chs. by 2 sets of chainmen is 2 lks. position of middle point,
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
8057 ft.	80.00	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 18 ins. in the ground to bed rock for 173rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 173 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		Low peak S. end of pinon hills bears N. 5° W. about 2 miles dist.
		Top of San Antonio Mountain bears S. 31° W.
		Land, nearly level, volcanic mesa.
		Soil, rocky and sandy, 4th rate.
		Vegetation, weeds and greasewood.
		Alt. 8075 ft.
		Temp. 70°.

Altitude	Chs.	
		174th Mile
		S. 89° 55′ E. on the tangent to the parallel.
		Descend over gently rolling land:
	2.00	Bottom of hollow 15 ft. deep, drains N. E.; ascend.
		They were nearly all lying on the ground,
	28.00	Top of ridge about 30 ft. high, bears N. E. and S. W.
		Descend gradually,
[fol. 196]		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
8100 ft.	80.00	N. 49 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 174th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 174 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		Top of Ute Peak bears S. 70° 20′ E.
		Top of San Antonio Mountain bears S. 35° 10′ W.
		Land, gently rolling mesa.
		Soil, rocky and sandy, 4th rate.
		Vegetation, weeds and greasewood.
		Alt. 8100 ft.
		Temp. 68°.
		175th Mile
		S. 89° 55′ E. on the tangent to the parallel.
		Over gently rolling mesa.
	42.40	Wagon road, bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
7980 ft.	80.00	N. 62 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 18 ins. in the ground to bed rock for 175th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 175 M. stamped in the center.

Altitude	Chs.	
		Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
[fol. 197]		Top of San Antonio Mountain bears S. 38° 50' W.
		Top of Ute Peak bears S. 68° 45' E.
		Land, nearly level mesa.
		Soil, rocky and sandy, 4th rate.
		Vegetation, scanty weeds and greasewood.
		Alt. 7980 ft.
		Temp. 68°.

April 22nd, 1903.

176th Mile

I examine the instrument and compare the steel tapes with the standard, find the instrument in perfect adjustment and the tapes of correct length.

		S. 89° 54' E. on the tangent to the parallel.
		Descend over gently rolling mesa.
	11.00	Draw, drains N. Irrigating ditch now dry, 1 ch. N., course N. W. to N. E.
	57.58	Wagon road bears N. and S.
	65.15	Top of ridge about 30 ft. high, bears N. W. and S. E.
		Descend.
	72.60	Irrigating ditch, now dry, at foot of ridge, course S. E.
		Thence across flat.
		Difference between measurement of 80.00 chs. by 2 sets of chainmen is nothing; the mean is 80.00 chs.
7950 ft.	80.00	N. 75 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 12 ins. in the ground to bed rock, for 176th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 176 M. stamped in the center.
		Raised a mound of stone 6 ft. base 3 ft. high around the post. Pits impracticable.
		No bearings.
		Land, gently rolling mesa.
[fol. 198]		Soil, rocky and sandy, 4th rate.
		Vegetation, weeds and greasewood.
		Alt. 7950 ft.
		Temp. 58°.

Altitude	Chs.	
		177th Mile
		S. 89° 53' E. on the tangent to the parallel.
		Over gentle rolling mesa.
	79.00	Foot of low ridge bears N. E. and S. W. ascend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs., the mean of which is 80.00 chs.
8000 ft.	80.00	N. 29 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 12 ins. in the ground to bed rock, for 177th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 177 M. stamped in the center. Raised a mound of stone 6 ft. base, 3 ft. high around the post. Pits impracticable.
		Top of San Antonio Mountain bears S. 44½ W.
		Low peak S. end of pinon hills bears N. 69½ W.
		Top of Ute peak bears S. 65½ E.
		About 2 miles N. to foot of pinon hills.
		Land, lava mesa.
		Soil, volcanic ash and sand, 4th rate.
		Vegetation, scanty salt sage, grass, weeds and greasewood.
		Alt. 8000 ft.
		Temp. 62°
		178th Mile
		S. 89° 53' E. on the tangent to the parallel.
		Over nearly level mesa.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point.
[fol. 199]		By 1st set 80.01 chs.
		By 2nd set 79.99 chs., the mean of which is 80.00 chs.
7950 ft.	80.00	N. 110 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 178th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. 178 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs	
		Pits impracticable.
		Low peak, S. end of pinon hills bears N. 73° W.
		Top of San Antonio Mountain bears S. 47½° W.
		Land, nearly level mesa.
		Soil, sand and volcanic ash, 4th rate.
		Vegetation, scanty, grass, weeds, salt sage and greasewood.
		Alt. 7950 ft.
		Temp. 70°.

179th Mile

	S. 89° 52' E. on the tangent to the parallel. **Descend.**
3.75	Bottom of draw drains N. E., ascend, leave mesa, bears N. E. and S. W.
4.00	Irrigation ditch, now dry, course N. E.
5.00	Top of spur, slope N. W.
	Bottom of gulch, dry, course N. W.
10.00	Foot of hill, bears N. W. and S. E., ascend.
29.00	Top of spur, slope S., descend gradually.
40.00	Head of draw, drains N. E.
	Ascend hill bears N. E. and S. W.
	Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
	By 1st set 80.02 chs.
	By 2nd set 79.98 chs., the mean of which is 80.00 chs.
8180 ft. 80.00	N. 129 lks. from the tangent.
[fol. 200]	Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 179th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 179 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post.
	Pits impracticable.
	This corner stands on point of spur, slope N.
	No bearings.
	Land, rolling.
	Soil, sandy, 4th rate.
	Vegetation, scanty, grass, weeds and greasewood.
	Alt. 8180 ft.
	Temp. 70°.

180th Mile

	S. 89° 52' E. on the tangent to the parallel.
	Over rolling hills; descending.
10.00	In hollow drains N.; ascend.
21.00	Top of spur about 5 ft. high, slope N.; descend.

Altitude	Chs.	
	58.00	Bottom of ravine 50 ft. deep, course N. W.; ascend
8200 ft	61.50	Top of ridge or gap or saddle. Peak 100 ft. higher about 10 chs. S. W. and peak about the same height about 20 chs. N.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs., mean of which is 80.00 chs.
8150 ft	80.00	N. 150 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 180th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 180 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable.
[fol. 201]		No bearings.
		Land, rolling hills.
		Soil, sandy and rocky, 4th rate.
		Vegetation, salt sage, cactus and greasewood.
		Alt. 8150 ft.
		Temp. 72

181st Mile.

		S. 89° 51' E. on the tangent to the parallel. Ascend over broken rock.
8200 ft	37.00	Lava ridge bears N. E. and S. W.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
8100 ft.	80.00	N. 172 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 181st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 181 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		This cor. stands at foot of small black butte, the top of which is about 10 chs. N.
		No bearings.
		Land, rolling.
		Soil, rocky and sandy, 4th rate.

Azimuth Chs

Vegetation, salt sage, cactus and greasewood
Alt. 8100 ft
Temp. 72°

182nd Mile

S. 89° 30' E. on the tangent to the parallel.
Descending gradually.
[fol. 202] Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks.; position of middle point.
By 1st set 80.02 chs.
By 2nd set 79.98 chs.; the mean of which is 80.00 chs.
8000 ft. 80.00 N. 196 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 12 ins. in the ground to bed rock, for 182nd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 182 stamped in the center. Raised a mound of stone 5 ft. base, 3 ft. high around the post.
Pits impracticable.
Top of little black butte bears N. 87½° W. about one mile dist.
Ute Peak bears S. 41° E.
Top of San Antonio Mountain bears S. 55° W.
Land sloping E. and N. E.
Soil, sandy, 4th rate.
Vegetation, salt sage, cactus and greasewood
Alt. 8000 ft.
Temp. 72°

183rd Mile

S. 89° 30' E. on the tangent to the parallel. Descending gradually.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.
By 1st set 80.03 chs.
By 2nd set 79.97 chs.; mean of which is 80.00 chs.
7920 ft. 80.00 N. 224 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 183rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 183 M stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
[fol. 203] Pits impracticable.

Altitude	Chs.	
		Ute Peak bears S. 32° E.
		Top of San Antonio Mt. bears S. 59° 45′ W.
		Land, sloping gently E.
		Soil, very sandy, 4th rate.
		Vegetation, salt sage and greasewood.
		Alt. 7900 ft.
		Temp. 76°.

184th mile

S. 89° 49′ E. on the tangent to the parallel. Descending gradually.

7825 ft.	40.20	On top of wall, brink of canon of Rio Grande, bears N. and SE.
		Difference between measurements of 40.20 chs. by 2 sets of chainmen is nothing; the mean is 40.20 chs.
	40.20	Stadia measurement from this point
		Angle 0°. Rod 9.20 double=1840 ft.+C.=1.15 ft.=1841.15 ft.=27.89 chs.+40.20 chs.=
	68.09	chs
	46.00	Foot of wall about 125 ft. high, bears N. and SE.
	50.00	Rio Grande River, 2 chs. wide, water 3 ft. deep, course SE.
7700 ft.	62.00	Foot of wall of canon bears N. and S.
7825 ft.	65.90	Top of wall about 125 ft. high, bears NE. and S.
	68.09	Stadia point, thence by tape measurement, over nearly level land.
7825 ft.	80.00	N. 247 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground, for 184th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 184 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		E. peak of Sierra Blanca bears N. 18° 10′ E.
		Ute Peak S. 24° E.
[fol. 204]		Top of San Antonio Mt. bears S. 58° 20′ W.
		Land, mesa and canon.
		Vegetation, greasewood and cactus, fringe of willow in canon.
		Alt. 7825 ft.
		Temp. 70°.

April 23rd, 1903.

I examine the transit, compare the steel tapes with the standard and find all correct this morning.

Altitude	Chs.	
		185th mile
		S. 89° 48' E. on the tangent to the parallel, over gently rolling valley land.
7830 ft	35.60	Top of ridge bears NW. and SE. about 30 ft. above last corner; descend.
	56.32	Wagon road, bears NW. and SE. from the Rio Grande bridge about 6 miles N. to Taos, N. M.
	75.00	Enter creek bottom, bears NE. and SW.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 7 9.98 chs.; the mean of which is 80.00 chs.
7800 ft.	80.00	N. 275 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 185th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 185 M. stamped in the center. Dug pits 36x36x18 ins. N. S. E. and W. of cor. 6 ft. dist. Raised a mound of earth 3 ft. base around the post.
		This cor. stands on creek bottom.
		San Antonio Mt. bears S. 61° W.
		Ute Peak bears S. 11° E.
		Land, rolling and creek bottom.
		Soil, sandy, 3rd rate and 4th rate.
[fol. 205]		Vegetation, scanty, grass, sage and rabbit brush.
		Alt. 7800 ft.
		Temp. 70°.
		186th Mile
		S. 89° 48' E. on the tangent to the parallel. Across creek bottom.
7790 ft.	10.32	Costilla River 1 ch. wide, muddy water, about 6 ins. deep, course SW.
	24.50	Wagon road bears NE. and SW.; ascend gradually.
7850 ft.	74.00	Top of bluff about 20 ft. high bears NE. and SW.
		Descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.

Altitude	Chs.	
		By 1st set 80.03 chs.
		By 2nd set, 79.97 chs.; the mean of which is 80.00 chs.
7825 ft.	80.00	N. 305 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 186th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 186 M. stamped in the center. Dug pits 36x36x18 ins. N., S., E. and W. of cor 6 ft. dist. and raised a mound of earth 3 ft. base 2 ft. high around the post.
		No bearings.
		This cor. stands at foot of bluff about 12 ft. high, bears NE. and SW.
		Alt. 7825 ft.
		Temp. 72°.

187th Mile

		S. 89° 47′ E. on the tangent to the parallel, over nearly level land.
		Difference between measurements of 80.00 chs by 2 sets of chainmen is nothing, the mean is 80.00 chs.
7850 ft.	80.00	N. 337 lks. from the tangent.
[fol. 206]		Set an iron pipe 3 ins. dia. 4 ft. long with flang at the bottom 2 ft. in the ground for 187th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 187 M. stamped in the center. Dug Pits 36x36x18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base, 2 ft. high around the post.
		Ute Peak bears S. 17° 10′ W.
		Land, nearly level.
		Soil, gravelly, 3rd rate.
		Vegetation, grass and sage.
		Alt. 7850 ft.
		Temp. 76°.

188th Mile

		S. 89° 46′ E. on the tangent to the parallel.
	2.90	Wagon road bears NE. and SW.
	47.65	Wagon road bears N. and S.

Altitude	Chs.	
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
7870 ft.	80.00	N. 370 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground for 188th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 188 M. stamped in the center. Dug pits 36x36x18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A red peak in the pinion hills bears N. 60° W.
		Ute Peak bears S. 29° W.
		Land, nearly level.
		Soil, gravelly, 3rd rate
		Vegetation, grass and sage.
		Alt. 7870 ft.
		Temp. 76°.

[fol. 207] 189th Mile

S. 89° 46' E. on the tangent to the parallel
Over nearly level land.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point.
By 1st set 80.02 chs.;
By 2nd set 79.98 chs.; the mean of which is 80.00 chs.

7900 ft. 80.00 N. 404 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom, 2 ft. in the ground for 189th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 189 M stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist., Raised a mound of stone 5 ft. base 2 ft. high around the post.
Red Peak bears N. 62° 15' W.
Ute Peak bears S. 37½° W. Chefolo Peak bears S. 15½° W.
Land, nearly level.
Soil, gravelly, 3rd rate.
Vegetation, grass and sage
Alt. 7900 ft.
Temp. 76°.

Altitude	Chs.	
		190th Mile
		S., 89° 45′ E. on the tangent to the parallel.
		Over nearly level land.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point.
		By 1st set 70.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
7900 ft.	80.00	N. 440 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 190th mile cor. A brass cap on the top of the pipe has raised letters Co on N., N. M. on S. and 190 M.
[fol. 208]		stamped in the center. Dug pits 36 x 36 x 18 ins. dia. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		East peak of the Sierra Blanca bears N. 12 35′ E.
		Ute Peak bears S. 45½° W.
		Chefolo Peak bears S. 18½° W.
		Land, nearly level.
		Soil, very gravelly, 3rd rate.
		Vegetation, grass and sage.
		Alt. 7900 ft.
		Temp. 72°.

		191st Mile
		S. 89° 44′ E. on the tangent to the parallel.
		Over nearly level land.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
7860 ft.	80.00	N. 477 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 191st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 191 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.

Altitude . . Chs.

Sierra Blanca (East Peak) bears N. 10° 35′ E.
Red Peak in pinon hills bears N. 66° 35′ W.
Chefolo Peak bears S. 21° W.
Church spire in Costilla bears S. 73° 25′ E.
Land, nearly level.
Soil, gravelly, 3rd rate.
Vegetation, grass and sage.
Alt. 7860 ft.
Temp. 65°.

[fol. 209] I carefully adjust the transit in all its parts.

April 24th, 1903.

At the 191st mile cor. April 25th, 1903 at 5h 18m A. M. l. m. t. I observe Polaris at Eastern elongation and mark a point in the line so determined on a plug driven in the ground 10 chs. N. of my station.

At 7 h A. M., I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a plug driven in the ground N. of my station.

The magnetic bearing of the meridian is N. 13 10′ W.

This gives the magnetic declination 13° 10′ E.

I now lay off an angle of 90° from the meridian from the N. to the E. for the tangent to the parallel.

In all these observations, and the subsequent turning of angles, the mean of four sights was used, with the telescope reversed at each sight.

I compare the steel tapes with the standard and I find them of correct length.

192nd Mile

East on the tangent to the parallel.
Over nearly level land.
12.80 Wagon road bears N. E. and S. W.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point
By 1st set 80.03 chs.
By 2nd set 79.97 chs.; the mean of which is 80.00 chs.

Altitude	Chs.	
7859 ft.	80.00	N. .76 of a link from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 192nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 192 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mount of earth, 5 ft. base 2 ft. high around post.
[fol. 210]		East peak Sierra Blanca, bears N. 9° 35' E. Red peak in pinon hills, S. W. of Rio Grande bridge bears N. 68° W. Chefolo Peak bears S. 24° 10' W. Church spire in Costilla bears S. 65° 10' E. about 2 miles dist. Land, nearly level. Soil, gravelly, 3rd rate. Vegetation, grass and sage. Alt. 7850 ft. Temp. 56°.

193rd Mile

S. 89° 59' E. on the tangent to the parallel, over nearly level land.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.

By 1st set 80.02 chs.

By 2nd set 79.98 chs.; the mean of which is

7906 ft.	80.00	N. 3 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 193rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 193 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mount of earth 5 ft. base, 2 ft. high around the post.
[fol. 211]		East peak Sierra Blanca bears N. 9° 15' S. Ute Peak bears S. 60½° W. Church spire in Costilla bears S. 45½° E. about a mile dist. Land, nearly level. Soil, gravelly, 3rd rate. Vegetation, grass and sage. Alt. 7,900 ft. Temp. 62°.

Altitude Chs.

194th Mile

S. 89° 50′ E. on the tangent to the parallel.

21.00 Wagon road bears N. E. and S. W.

29.55 Irrigation ditch, course N.

30.00 Pole fence bears N. and S.; enter cultivated fields bears N. and S.

61.48 W. side of Mexican adobe house in village of La Costilla about ½ mile North of the church. Line strikes house about 10 ft. N. of the S. end.

68.00 Street bears N. W. and S. E.

74.00 W. bank of La Costilla River, bears N. 10° E. and S. 10° W. 4 ft. high, stream 150 lks. wide, 6 ins. deep, muddy water swift current, course N. E.

78.00 E. bank about 3 ft. high, bears N. and S.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks. position of middle point.

By 1st set 80.04 chs.

By 2nd set 79.96 chs.; the mean of which is 80.00 chs.

7950 ft. 80.00 N. 7 lks. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 194th mile cor. A brass cap on top of the pipe has raised letters Colo. on N.; N. M. on S. and 194 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of stone 5 ft. base 2 ft. high around the post.

This cor. stands on right bank of Costilla River by wire fence, at west edge of cultivated field.

A cottonwood tree 30 ins. dia. bears N. 78° E. 292 lks. dist. marked Colo., 194 M., B. T.

A cottonwood tree 26 ins. dia. bears S. 22° E. 322 lks. dist. marked N. M., 194 M., B. T.

fol. 212 No other trees within limit suitable for bearing trees.

Church spire in Costilla bears S. 5¼° W. about ½ mile dist.

Land, nearly level.

Soil, gravelly, 3rd rate.

Vegetation, grass, sage and cultivated crops.

A few cottonwood trees along E. side of river.

Alt. 7950 ft.

Temp. 64°.

Altitude	Chs.	
		195th Mile
		S. 89° 58′ E. on the tangent to the parallel, across river bottom. Enter cultivated field.
	2.50	Irrigating ditch, course N.
	3.00	Narrow line of willow brush bears N. E. and S. W.
	6.00	Leave brush, enter cultivated field. Bears N. E. and S. W.
	79.90	Brook 2 lks. wide, course N. E.
		Difference between measurment of 80.00 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
8000 ft.	80.00	N. 12 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 195th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 195 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist.
		Raised a mount of earth 5 ft. base 2 ft. high around the post.
		West pit comes in brook. Impracticable.
		This cor. stands on right bank of stream.
		No bearings.
		Land, sloping gradually toward river.
		Soil, gravelly, 3rd rate.
[fol. 213]		Vegetation, cultivated crops.
		Alt. 8000 ft.
		Temp. 60°.

		196th Mile
		S. 89° 57′ E. on the tangent to the parallel. Ascending gradually.
	7.50	Leave cultivated land, bears N. E. and S. W.
	10.90	Wire fence bears N. E. and S. W.
8020 ft.	12.00	Wagon road, bears N. E. and S. W.
		Foot of hills bear N. E. and S. W.; ascend.
		Difference between measurements of 20.30 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 20.31 chs.
		By 2nd set 20.29 chs.; the mean of which is 20.30 chs.
	20.30	On bench bears N. E. and S. W.

Altitude	Chs.	
		Stadia measurement from this point. Angle 6 +. Rod 12.50 single = 1250 ft. × 9891.38 ft. + C. = 1.14 ft. = 12357.52 ft. = 18.75 chs. + 20.30 chs. = 39.05 chs.
	39.05	Stadia point on bench bears N. and S. Stadia measurement. Angle 9° + Rod 7.65 single = 765 ft. × .9755 = 746.25 ft. + C. = 1.13 ft. = 747.39 ft. = 11.32 chs. + 39.05 chs. = 50.37 chs.
	50.37	Stadia point on bench, bears N. and S. Enter pinon timber, bears N. and S. Stadia measurement. Angle 11° +. Rod 11.29 double = 2258 ft. × .9636 = 2175.81 ft. + C. = 1.13 ft. = 2176.94 ft. = 32.98 chs. + 83.25 chs. 80. — 80 chs. = 3.35 chs. on 197th mile.
	80.00	Comes on steep W. slope of lava wall. Impracticable to establish the cor. at this point. Land, rough and broken. Soil, rocky, and sandy, 4th rate. Vegetation, grass, sage and pinon timber.

197th Mile

[fol. 214]		S. 89° 57' E. on the tangent to the parallel. Ascend.
	3.35	On top of lava rim rock bears N. and S. Stadia point, thence by tape measurement.
8550 ft.	4.00	N. 20 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 196th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 196.05 M. stamped in the center. Raised a mound of stone, 5 ft. base 2 ft. high around the post. Pits impracticable. A pinon tree 7 ins. dia. bears N. 34½° E. 23 lks. dist. marked Colo. 196.05 M., B. T. A pinon tree 7 ins. dia. bears S. 66½° E. 102 lks. dist. marked N. M. 196.05 M., B. T. A cedar tree 8 ins. dia. bears S. 7¼° W. 78 lks. lks. ddist. marked N. M., 196.05 M., B. T. A cedar tree 8 ins. dia. bears N. 81½° W. 48 lks. dist. marked N. M., 196.05 M., B. T. Alt. 8550 ft. Temp. 55°. Thence over top of lava hill.
	20.00	Descend gradually, slope S. E.

Altitude	Chs	
	31.00	Leave timber bears N. and S. Enter heavy sage brush.
	32.00	Wagon road bears N. W. and S. E.
	79.60	Wagon road, bears N. E. and S. W.
		Difference between measurements of 79.60 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 79.63 chs.
		By 2nd set 79.57 chs.; the mean of which is 79.60 chs. + 1.00 chs. = 80.60 chs.
8500 ft	80.60	N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 18 ins. in the ground to bed rock for 197th mile cor. A brass cap on the top of pipe has raised letters Colo. on N., N. M. on S. and 197 M. stamped in the center. Raised a mound of stone, 6 ft. base, 2½ ft. high around the post. Pits impracticable.
[fol. 245]		First peak on main range N. of the line bears N. 71° 20' E.
		A sharp timbered peak bears S. 6° 25' W. Land, mountainous.
		Soil, rocky, clay and and, 3rd rate.
		Vegetation, sage, cedar and pinion.
		Alt. 8500 ft.
		Temp. 55°
		S. 89° 56' E. on the tangent to the parallel. Descending.
	7.30	Dry ravine, course S. about 50 ft. deep; ascend
	12.00	Top of rocky spur, about 50 ft. high, slope S. E.
	31.00	On spur, slope S. E.; descend. Enter scattering pinion.
	17.00	Foot of hills, leave timber. Enter Arroyo Seco valley bears N. E. and S. W.
	64.40	Wagon road, bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs., the mean of which is 80.00 chs.
8450 ft	80.60	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 198th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 198 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S.,

Altitude Chs

E. and W. of the cor. 6 ft. dist. Raised a mound of earth, 5 ft. base 2 ft. high around the post.
Sharp peak of main range bears N. 70½° E.
Timbered peak bears S. 16¼° W.
Ute Peak bears S. 71° W.
Land, rolling.
Soil, sandy, 3rd rate.
[fol. 216] Vegetation, grass, sage and scattering pinon.
1 Alt. 8450 ft.
Temp. 48°

April 25th, 1903.

I examine the transit, compare the steel tapes with the standard and find all correct, and in adjustment.

199th Mile

S. 89° 55' E. on the tangent to the parallel. Over gently rolling land.
44 11 Wagon road, bears N. E. and S. W.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
By 1st set 80.02 chs.
By 2nd set 79.98 chs; the mean of which is 80.00 chs.
8500 ft. 80.00 N. 14 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 199th mile cor. A brass cap on the top of the pipe has raised letters Cole on N., N. M. on S. and 199 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. and raised a mound of earth 5 ft. base 2 ft. high around the post.
Sharp timbered peak bears S. 26° W.
Peak on main range N. of line bears N. 69½° E.
Land, gently rolling.
Soil, sand and clay, 3rd rate.
Vegetation, grass and sage.
Alt. 8500 ft.
Temp. 45°.

200th Mile

S. 89° 55' E. on the tangent to the parallel.
66.97 Wagon road bears N. E. and S. W.

Altitude	Chs.	
		Difference between measurements of 80.00 chs.
[fol. 217]		by 2 sets of chainmen is nothing, the mean of which is 80.00 chs.
8500 ft.	80.00	N. 14 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 200th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 200 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		East oak of Sierra Blanca bears N. 0° 45' W.
		Small cone in valley bears N. 5¼° W. about 3 miles dist.
		Sharp timbered peak bears S. 31¼° W.
		Land, gently rolling.
		Soil, sand and clay, 3rd rate.
		Vegetation, grass and sage.
		Alt. 8500 ft.
		Temp. 52°

201st Mile

		S. 89° 54' E. on the tangent to the parallel.
	37.19	Gusch. stream 3 lks. wide, course N.
8550 ft.	61.06	Foot of hills, leave valley, bears N. E. and S. W. ascend, on irrigated meadow S. of line.
		Mexican house about 20 chs. S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks. position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
8650 ft.	80.00	N. 76 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 201st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 201 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S.,
[fol. 218]		E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		Small cone in valley bears N. 23½° W.
		East peak Sierra Blanca bears N. 2½° W.
		Ute Peak bears S. 74° 45' W.
		Land, gently rolling.
		Soil, sand, clay, 3rd rate.
		Vegetation, grass and sage.
		Alt. 8650 ft.
		Temp. 60°.

Altitude	Chs	
		202nd Mile
		S. 89° 53′ E. on the tangent to the parallel.
8700 ft.	44.00	Foot of mountains, Culebra range, bears N. and S. Ascend.
	55.00	A pile of stone, but no legible marks, which I take to be Darling's 139th mile cor., bears S. 24.00 chs. from the tangent. I find no Darling corners E., of here until I reach his 117th mile cor. Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs., the mean of which is 80.00 chs.
8800 ft.	80.00	N. 92 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 202nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 202 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		Ute Peak bears S. 75½° W.
		Small cone in valley bears N. 37° 45′ W. about 5 miles dist.
		East peak of Sierra Blanca bears N. 4° W. Land, mountainous.
		Soil, clay loam, 3rd rate.
[fol. 229]		Vegetation, grass and sage.
		Alt. 8,800 ft.
		Temp. 55

		203rd Mile
		S. 89° 53′ E. on the tangent to the parallel.
		Ascend along N. W. slope.
	21.00	Enter oak, willow and aspen brush; and aspen timber bears N. W. and S.
	79.75	Dry ravine 15 ft. deep, course N.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 80.06 chs., the mean of which is 80.00 chs.
8850 ft.	80.00	N. 110 lks. from the tangent.

Altitude Chs.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 203rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 203 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
Pits impracticable.
A yellow pine tree 36 ins. dia. bears N. 28½ E. 19 lks. dist. marked Colo. 203 M., B. T.
An aspen tree 7in. dia. bears S. 41½° E. 17 lks. dist. marked N. M., 203 M., B. T.
An aspen tree 6 ins. dia. bears S. 49½° W. 60 lks. dist. marked N. M., 203 M., B. T.
A balsam fir tree 10 ins. dia. bears N. 33½ W. 55 lks. dist. marked Colo., 203 M., B. T.
Land, mountainous.
Soil, clay loam, 3rd rate.
Vegetation, scattering pine and aspen timber; oak, aspen and willow brush.
Alt. 8,850 ft.
Temp. 55°.

April 26th, 1903.

[fol. 220]

From the 203rd mile cor. the line was run over the mountain range as a random, owing to the snow being too deep to set the permanent corners.
At 217 miles 3.55 chs., I intersect a meridian line from the 5th Astronomical station at 32.44 chs. N. of said station
The latitude of this station as determined by astronomical observations, made on the nights of October 21st, 22nd and 23rd, 1902; is 36° 35.95" or 36.8d chs., South of the true parallel.
Our offset for this point is 19 lks. N. of the tangent, which would place the boundary line as projected from the W. 4.21 chs. S. of the true parallel (inside the limit) but as this line has been run from the 203rd mile as a random line, I make the offset from the tangent at our 217th mile cor. 271 lks. N. of the tangent, and locate the point for the 217th mile cor. 35.15 chs. N. of the Astronomical station and 169 lks. S. of the 37th parallel, as determined by astronomical observations.
This will amount to a correction of 18 lks. to the mile to the N. from the 203rd mile. I return and make this correction later in the season when the snow has gone, as will be seen by the dates given.

Altitude	Chs.	
		July 7th, 1903, I examine the transit, compare the steel tapes with the standard and find them all correct and in adjustment.

204th Mile

S. 89° 52′ E. on the tangent to the parallel.
Ascend along N. slope in timber and brush.

42.00 Stream 6 lks. wide, course N. W.; ascend W. slope.

56.12 Top of spur slope S.; ascend gradually.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.

By 1st set 80.05 chs.

[fol. 221] By 2nd set 79.95 chs.; the mean of which is 80.00 chs.

9300 ft. 80.00 N. 129 lks. + Correction 18 lks. N. = 147 lks. N. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 204th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 204 M. stamped in the center.

Raised a mound of stone 5 ft. base 2 ft. high around the post.

Pits impracticable.

This cor. stands at foot of a rock-slide on N. slope; a small lake about 20 chs. N.

An aspen tree 10 ins. dia. bears N. 40½° E. 49 lks. dist. marked Colo., 204 M., B. T.

An aspen tree, 8 ins. dia. bears S. 55½° E. 47 lks. dist. marked N. M., 204 M., B. T.

An aspen tree 8 ins. dia. bears S. 49½° W. 22 lks. dist. marked N. M., 204 M., B. T.

An aspen tree 8 ins. dia. bears N. 28° W. 22 lks. dist. marked Colo., 204 M., B. T.

Land, mountainous.

Soil, rocky, clay, 3rd rate.

Vegetation, spruce and aspen timber; oak and aspen brush.

Alt. 9300 ft.

Temp. 77°.

205th Mile.

S. 89° 52′ E. on the tangent to the parallel.
Ascend steep N. W. slope.

Altitude	Chs.	
9800 ft.	24.88	Top of sharp spur, slope N.
		Thence by stadia measurement.
		Angle 5° +. Rod 13.00 double = 2,600 ft. × 9924 = 2,580.24 ft. + C. = 1.14 ft. = 2,581.38 ft. = 39.50 chs. + 24.88 chs. = 64.38 chs.
9000 ft.	55.00	Bottom of canon about 800 ft. deep; S. branch of the Calavera River, stream 10 lks. wide, course N. W.; ascend.
	54.38	Stadia point on spur, slope N. W.
[fol. 222]		Thence by tape measurement, ascend very steep N slope.
		Difference between measurements of 40.50 chs. by 2 sets of chainmen is 6 lks, position of middle point,
		By 1st set 40.53 chs.
		By 2nd set 40.47 chs.; the mean of which is 40.50 chs. + 39.50 chs. = 80.00 chs.
10400 ft.	80.00	N. 150 lks. + Correction 36 lks. N. = 186 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 205th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 205 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		This cor. stands on steep N. slope.
		A spruce tree 6 ins. dia. bears N. 85° E. 30 lks. dist. marked Colo., 205 M., B. T.
		An aspen tree 6 ins. dia. bears S. 53½° E. 24 lks. dist. marked N. M., 205 M., B. T.
		A spruce tree 10 ins. dia. bears S. 58° W. 84 lks. dist. marked N. M., 205 M. B. T.
		A spruce tree 8 ins. dia. bears N. 31° W. 52 lks. dist. marked Colo., 205 M., B. T.
		Land, mountainous, rough and broken.
		Soil, rocky, 4th rate.
		Vegetation, spruce and aspen timber, spruce and aspen brush.
		Alt. 10,400 ft.
		Temp. 80°.

206th Mile

S. 89° 51′ E. on the tangent to the parallel.
Ascend through timber and brush.

14.00	Top of spur, slope S. W.; ascend.
41.00	Top of bluff, bears N. E. and S. W.

Altitude	Chs.	
	75.00	Leave timber, bears N. and S. Ascend steep W. slope over broken rock.
11500 ft. [fol. 223]	80.00	Comes on steep W. slope among broken rock Impracticable to establish corner at this point. Land, mountainous. Soil, rocky, 4th rate. Vegetation, spruce and aspen, timber and brush. Alt. 11,500 ft. Temp. 70°.
		S. 89° 50′ E. on the tangent to the parallel. Ascend very steep over broken rock. Difference between measurements of 108.00 chs. by 2 sets of chainmen is 20 lks. position of middle point: By 1st set 108.10 chs. By 2nd set 107.90 chs.; the mean of which is 108.00 chs. — 80.00 chs. = 28.00 chs.
12000 ft.	28.00	N. 180 lks. + Correction N. 60 lks. = 240 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 10 ins. in broken rock, to bed rock for 206th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 206.35 M. stamped in the center. Raised a mound of stone 6 ft. base 2½ ft. high around the post. Pits impracticable. East peak Sierra Blanca bears N. 9° 35′ W. Ute Peak bears S. 79° 10′ W. Sharp peak on spur bears S. 64° 20′ W. about 2 miles dist. This cor. stands on shoulder of mountain, a bare rock spur, slope W. above timber line. Alt. 12,000 ft. Temp. 70°. Ascend along spur. Difference between measurements of 29.00 chs. by 2 sets of chainmen is 4 lks., position of middle point. By 1st set 29.02 chs. By 2nd set 28.98 chs.; the mean of which is 29.00 chs + 28.00 chs. = 57.00 chs.
	57.00	Stadia measurements from this point.
		[fol. 224] Angle 18 +. Rod 10.50 double = 2,100 ft. × .9045 = 1,899.45 ft. + C. = 1.09 ft. = 1,900.54 ft. = 28.79 chs. + 57.00 chs. = 85.79 chs. − 80.00 chs. = 5.79 chs. on the 208th mile.
	80.00	Comes on W. slope of mountain near top.

Altitude	Chs.	
		I advance this cor. to the top.
		Land, mountainous.
		Soil, none, all rock.
		Vegetation, moss and lichen.

208th Mile

		S. 89° 50′ E. on the tangent to the parallel.
		Ascend over broken rock.
	5.79	Stadia measurement, thence by tape measurement.
12700 ft.	8.00	N. 199 lks. + Correction 74 lks. N. = 273 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in broken rock, for 207th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 207.1 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		High peak on range bears N. 44° 45′ E.
		Monument on lower peak, appears to be shaft of stone, 8 or 10 ft. high, bears N. 56° E. about 5 miles dist.
		East peak Sierra Blanca bears N. 10½° W.
		Ute Peak in San Luis bears S. 79° 30′ W.
		This cor. stands on top of high spur of the Culebra Range that bears N. and S. at this point, but the trend of the range is N. E. and S. W. This spur is much higher than the "divide," further E. and above timber line.
		Alt. 12,700 ft.
		Temp. 60°.
		Descend gradually.
12650 ft.	17.87	Brow of mountain bears N. and S. On snow bank about 30 ft. deep.
[fol. 225]		Stadia measurement from this point.
		Angle 16° —. Rod 9.04 double = 1808 ft. × .9240 = 1670.59 ft. + C. = 1.10 ft. = 1671.69 ft. = 25.33 chs. + 17.87 chs. = 43.20 chs.
	43.20	Stadia point on spur, slope N. E. Enter timber; descend.
		Stadia measurement.
		Angle 17° —. Rod 6.70 double = 1340 ft. × .9145 = 1225.43 ft. + C. = 1.10 ft. = 1226.53 ft. = 18.58 chs. + 43.20 chs. = 61.78 chs.
	50.00	Hollow drains S. E.; ascend.
	61.78	Stadia point on spur, slope S. W.

Altitude	Chs.	
		Descend steep bluff.
		Stadia measurement.
		Angle 14° —, Rod 11.00 single = 1100 ft. × .9415 = 1035.65 ft. + C. = 1.11 ft. = 1036.76 ft. = 15.71 + 61.78 chs. = 77.49 chs.
	68.00	Foot of bluff bears N. E. and S. W.; dry ravine, course N. E.
		Ascend.
	72.00	On flat spur, slope N. E.; descend in dead fallen timber.
	77.49	Stadia point, thence by tape measurement.
11060 ft.	80.00	N. 211 lks. + Correction, 90 lks. N. = 311 lks. N. from the tangent.
		Set an iron pipe, 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 208th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 208 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 5 ins. dia. bears N. 51½° E. 40 lks. dist. marked Colo., 208 M., B. T.
		A spruce tree 4 ins. dia. bears S. 29½° E. 22 lks. dist. marked N. M., 208 M., B. T.
		A spruce tree 5 ins. dia. bears S. 15° W. 16 lks. dist. marked N. M., 208 M., B. T.
		A spruce tree 8 ins. dia. bears N. 28° W. 61 lks. dist. marked Colo., 208 M., B. T.
[fol. 226]		This cor. stands on N. E. slope in dead and fallen timber, and young spruce.
		Land, mountainous.
		Soil, rocky, 4th rate.
		Vegetation, spruce, timber and brush.
		Alt. 11000 ft.
		Temp. 65°.

July 7th, 1903.

I examine the transit, compare the steel tapes with the standard and find all correct and in adjustment.

July 6th, 1903.

209th Mile

		S. 89° 49′ E. on the tangent to the parallel.
		Descend in timber and brush.
10800 ft.	12.00	Brow of bluff bears N. E. and S. W.; descend.

Altitude	Chs	
	17.00	Enter heavy spruce timber, bears N. and S.
10000 ft.	80.00	Comes in ravine, stream 3 lks. wide, course N. I advance this cor.
		Land, mountainous.
		Soil, rocky. 4th rate.
		Vegetation, spruce and aspen timber and brush.

210th Mile

S. 89° 48' E. on the tangent to the parallel. Ascend.

Difference between measurements of 95.20 chs. by 2 sets of chainmen is 14 lks., position of middle point:

By 1st set 95.27 chs.

By 2nd set 95.13 chs.; the mean of which is 95.20 chs. — 80.00 chs. = 15.20 chs.

10050 ft.	15.20	N. 252 lks. + Correction = 112 lks. = 3.64 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 209th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 209.19 M. stamped in the center.
[fol. 227]		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 6 ins. dia. bears N. 65½° E. 12 lks. dist. marked Colo., 209.19 M., B. T.
		A spruce tree 6 ins. dia. bears S. 65½° E. 72 lks. dist. marked N. M., 209.19 M., B. T.
		An aspen tree 5 ins. dia. bears S. 44½° W. 94 lks. dist. marked N. M., 209.19 M., B. T.
		An aspen tree 5 ins. dia. bears N. 79° W. 70 lks. dist. marked Colo., 209.19 M., B. T.
		This cor. stands on the top of a glacial moraine, bears N. and S.
		Alt. 10050 ft.
		Temp. 70°.
		Descend.
	20.00	Foot of bluff about 200 ft. high bears N. and S.
9850 ft.	22.00	N. fork of the Costilla River, 10 lks. wide, course S. E.
		Ascend.
	37.60	Top of spur, slope S. about 100 ft. above creek, thence along S. slope.
	37.00	Stream 6 lks. wide, course S.; ascend along S. slope over aspen covered hills.

Altitude Chs

Difference between measurements of 64.80 chs. 2 sets of chainmen is 8 lks. position of middle point.

By 1st set 64.84 chs.

By 2nd set 64.76 chs., the mean of which is 64.80 chs. + 15.20 chs. = 80.00 chs.

[10000 ft. 80.00 N. 27½ lks. + Correction 126 lks. N = 401 lks. N. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long, with flanges at the bottom 2 ft. in the ground for 210th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M., on S. and 210 M. stamped in the center.

Raised a mound of stone 5 ft. base 2 ft. high around the post.

Pits impracticable.

[fol. 228] An aspen tree 5 ins. dia. bears S. 75° E. 32 lks. dist. marked N. M., 210 M., B. T.

An aspen tree 6 ins. dia. bears N. 28½° W. 193 lks. dist. marked Colo., 210 M., B. T.

No other trees within limit suitable for bearing trees.

This cor. stands on rocky S. W. slope in aspen brush.

Land, mountainous.

Soil, rocky, clay loam, 3rd rate.

Vegetation, grass, aspen and willow brush; and scattering spruce and aspen timber.

Alt. 10000 ft.

Temp. 72°.

211th Mile

S. 89° 48' E. on the tangent to the parallel.

Ascend along S. slope in aspen and willow brush.

18.00 Stream 4 lks. wide, course S. W.

45.00 Stream 3 lks. wide, course S. W.

[10800 ft. 69.00 Top of high rocky spur, slope S., descend.

[10500 ft. 79.00 Stream 4 lks. wide, in ravine, course S. W., ascend.

80.00 Comes in dense brush.

I advance this cor.

Land mountainous.

Soil, rocky, clay loam, 3rd rate.

Vegetation, grass, aspen and willow brush, scattering spruce and aspen timber.

Altitude	Chs.	212th Mile
		S. 89° 47′ E. on the tangent to the parallel. Ascend through timber and brush.
		Difference between measurements of 84.00 chs. by 2 sets of chainmen is 16 lks.; position of middle point.
		By 1st set 84.08 chs.
		By 2nd set 83.92 chs.; the mean of which is 84.00 chs. — 80.00 chs. = 4.00 chs.
11100 ft.	4.00	N. 306 lks. + Correction 145 lks. N. = 451 lks. N. from the tangent.
[fol. 229]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 211th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 211.05 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A spruce tree 5 ins. dia. bears N. 43½° E. 21 lks. dist. marked Colo., 211.05 M., B. T.
		A spruce tree 6 ins. dia. bears S. 54¼° E. 125 lks. dist. marked N. M., 211.05 M., B. T.
		A spruce tree 12 ins. dia. bears S. 54½° W. 79 lks. dist. marked N. M., 211.05 M., B. T.
		A spruce tree 6 ins. dia. bears N. 74° W. 105 lks. dist. marked Colo., 211.05 M., B. T.
		This cor. stands on W. slope in timber.
		Alt. 11100 ft.
		Temp. 72°.
		Ascend.
11200 ft.	17.41	Top of Divide between the waters of the Rio Grande and those that flow eastward, bears N. for ¼ mile, then N. W. and S. for 60 chs., then S. W. Alt. 11200 ft.
		Descend through heavy spruce timber.
	30.00	Leave heavy spruce timber and enter aspen and scattering spruce timber, bears N. and S.
	75.00	Foot of slope, bears N. E. and S. W. Enter dense willow brush, bears N. E. and S. W.
		Difference between measurements of 76.00 chs. by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 76.05 chs.
		By 2nd set 75.95 chs.; the mean of which is 76.00 chs. + 4.00 chs. = 80.00 chs.
10500 ft.	80.00	Comes in dense willow brush, ground swampy, impracticable to establish corner at this point.
		Land, mountainous.
		Soil, clay loam, 3rd rate.

Altitude Chs.

Vegetation, spruce and aspen timber; aspen and willow brush.

July 6th, 1903.

[fol. 230]

At the point for the 212th mile cor., as located May 4th, 1903, I observe Polaris at eastern elongation, at 4h 39m A. M. Lmt. May 5th, 1903, and mark a point in the line so found on a plug driven in the ground N. of my station. At 7h A. M. May 5th, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a plug driven in the ground N. of my station.

The magnetic bearing of the meridian is N. 13° 25′ W.

This gives the magnetic variation, 13° 27′ E.

I now lay off an angle of 90° from the meridian from the N. to the E. for the tangent to the parallel.

In all these observations and the subsequent turning of angles the mean of four sights was used with the telescope reversed at each sight.

May 5th, 1903.

July 5th, 1903.

I examine the transit, compare the steel tapes with the standard and find all correct and in adjustment.

213th Mile

East on the tangent to the parallel.

22.00 Leave willow brush and swampy ground, bears N. E. and S. W.

Difference between measurements of 26.00 chs. by 2 sets of chainmen is 2 lks., position of middle point.

By 1st set 26.01 chs.

By 2nd set 25.99 chs.; the mean of which is 26.00 chs.

16500 ft. 26.00 N. .2 of a link + Correction 167 lks. N. = 167.2 lks. N. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 212th mile cor. A brass cap on the pipe has raised letters Colo. on N., N. M. on S. and 212325 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.

[fol. 231]

Altitude	Chs	
		Pits impracticable.
		An aspen tree 5 ins. dia. bears S. 7° E. 125 lks. dist. marked N. M., 212.325 M., B. T.
		An aspen tree 5 ins. dia. bears S. 5½° W. 142 lks. dist. marked N. M., 212.325 M., B. T. No other trees within limits suitable for bearing trees.
		High peak on range bears N. 4½° W.
		Monument (appears to be shaft of stone, 8 or 10 ft. high) on low peak bears N. 34½° W. about 4 miles dist.
		Alt. 10,500 ft.
		Temp. 65°.
	28.00	Enter dense willow brush, bears N. E. and S. W.
	29.00	Stream 2 lks. wide, course N. E.; ascend.
	30.00	Leave willow, enter aspen brush, bears N. E. and S. W.
10700 ft.	55.00	Top of ridge bears N. E. and S. W.; descend.
	80.00	Comes in dense brush on steep S. E. slope.
		I advance this cor.
		Land, mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, grass, dense aspen brush, scattering spruce and aspen timber.

214th Mile

		S. 89° 30' E. on the tangent to the parallel.
9900 ft.	13.00	Bottom of deep ravine, course N. E.; ascend.
		Difference between measurements of 70.00 chs. by 2 sets of chainmen is 12 lks. position of middle point.
		By 1st set 70.06 chs.
		By 2nd set 69.94 chs.; the mean of which is 70.00 chs. + 26.00 chs. = 96.00 chs. — 80.00 chs. = 46.00 chs.
9950 ft. [fol. 232]	16.00	N. 1 lk. + Correction 183 lks. N. = 184 lks. N. from the tangent.
		Set an iron pipe 3 in. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 213th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 214.2 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 12 ins. dia. bears N. 43½° E. 47 lks. dist. marked Colo. 214.2 M., B. T.
		A spruce tree 12 ins. dia. bears S. 9° E. 35 lks. dist. marked N. M., 214.2 M., B. T.
		A spruce tree 12 ins. dia. bears S. 27½° W. 68

Altitude	Chs.	
		lks. dist. marked N. M., 213.2 M., B. T.
		An aspen tree 5 ins. dia. bears N. 37½° W. 41 lks. dist. marked Colo., 213.2 M., B. T.
		This cor. stands on N. slope in timber and brush.
		Alt. 9,950 ft.
		Temp. 70°.
		Thence along N. slope; descending.
		Difference between measurements of 64.00 chs. by 2 sets of chainmen is 14 lks. position of middle point.
		By 1st set 64.07 chs.
		By 2nd set 63.93 chs.; the mean of which is 64.00 chs. + 16.00 chs. = 80.00 chs.
9400 ft.	80.00	N. 3 lks. + Correction 198 lks. N. = 201 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 214th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 214 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 12 ins. dia. bears N. 37½° E. 42 lks. dist. marked Colo. 214 M., B. T.
[fol. 233]		An aspen tree 5 ins. dia. bears S. 32½° E. 73 lks. dist. marked N. M., 214 M., B. T.
		An aspen tree 5 ins. dia. bears S. 42½° W. 54 lks. dist. marked N. M., 214 M., B. T.
		A spruce tree 12 ins. dia. bears N. 58½° W. 154 lks. dist. marked Colo., 214 M., B. T.
		This cor. stands on N. slope in thick aspen.
		Land, mountainous.
		Soil, clay loam, 3rd rate.
		Vegetation, spruce and aspen timber; dense aspen brush.
		Alt. 9,400 ft.
		Temp. 70°.

215th Mile

		S. 89° 59' E. on the tangent to the parallel. Descend.
	4.00	Stadia measurement.
		Angle 3° +. Rod 13.00 double = 2600 ft. × .9891 = 2571.66 ft. + C. = 1.14 ft. = 2572.80 ft. = 38.98 chs. + 4.00 chs. = 42.98 chs.
9000 ft.	20.00	N. fork of Vermejo or Canadian River, 20 lks. wide, course S. E. in canon about 400 ft. deep; ascend.

Altitude	Chs.	
	42.98	Stadia point, thence by tape measurement; ascend along S. W. slope.
9500 ft.	52.00	Top of high spur, slope S. W.; descend.
	6.00	Bottom of dry gulch, course S. W.
	67.00	Darling's 117th mile cor., a conglomerate stone 16 x 10 x 5 ins. above ground, bears S. 32 chs. dist.
		I destroy this cor., and the marks on the bearing trees.
		This is the first cor. of Darling's I have been able to find this side of the mountain range.
	77.00	Dry gulch, course S. W.; ascend.
		Difference between measurements of 41.02 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 41.05 chs.
[fol. 234]		By 2nd set 40.99 chs.; the mean of which is 41.02 chs. + 38.98 chs. = 80.00 chs.
9300 ft.	80.00	N. 7 lks. + Correction 216 lks. N. = N. 233 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 215th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 215 M stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limits suitable for bearing trees.
		Land, mountainous.
		Soil, clay and sand, 3rd rate.
		Vegetation, oak and aspen brush; scattering, spruce and aspen timber.
		Alt. 9,300 ft.
		Temp. 72°.

216th Mile

S. 89° 58' E. on the tangent to the parallel. Difference between measurements of 23.00 chs. by 2 sets of chainmen is 2 lks. position of middle point.

By 1st set 23.01 chs.

By 2nd set 22.99; the mean of which is 23.00 chs.

9400 ft.	23.00	Top of ridge bears N. E. and S. W.; descend. Stadia measurement from this point.
		Ang'e 9° — Rod 10.20 double = 2040 ft. × .9755 = 1990.62 ft. + C. = 1.13 ft. = 1991.75 ft. = 30.17 chs. + 23.00 chs. = 53.17 chs.

Altitude	Chs.	
	53.17	Stadia point on bench bears N. E. and S. W.; descend.
		Stadia measurement.
		Angle 16° +, Rod 9.10 double = 1820 ft. × .9240 = 1681.68 ft. + C. = 1.10 ft. = 1682.78 ft. = 25.49 chs. + 53.17 chs. = 78.66 chs.
9000 ft.	60.00	Bottom of canon, stream 15 lks. wide, course S. W.
[fol. 235]		Ascend.
	78.66	Stadia point, thence by tape measurement.
9500 ft.	80.00	N. 12 lks. + Correction 234 lks. N. = 246 lks. N. from the tangent.
		Set temporary cor.
		Adjusted under instructions dated Sept. 9th, 1903.
		See page 417.
		Land, mountainous.
		Soil, rocky, 4th rate.
		Vegetation, grass, pine, aspen, willow and sage brush.
		Alt. 9500 ft.
		Temp. 65°.

217th Mile.

		S. 89° 57' E. on the tangent to the parallel.
		Ascend over rocks and through brush.
9650 ft.	3.00	Top of high, rocky ridge, bears N. 70° E. and S. 70° W.
		Descend by stadia measurement.
		Angle 15° —, Rod 8.50 double = 1700 ft. × .9330 = 1585.10 ft. + C. = 1.11 ft. = 1587.21 ft. = 24.04 chs. + 3.00 chs. = 27.04 chs.
	10.00	Foot of rocks, bears N. W. and S. E.
	27.04	Stadia point, thence by tape measurement, along S. slope.
		Descend.
		Difference between measurement of 52.96 chs. by 2 sets of chainmen is 8 lks. position of middle point,
		By 1st set 53.00 chs.
		By 2nd set 52.92 chs.; the mean of which is 52.96 chs. + 27.04 chs. = 80.00 chs.
8700 ft.	80.00	N. 19 lks. + Correction 252 lks. = 271 lks. N. from the tangent.
		Set temporary cor.
		The point located May 7th, 1903.
		See page 417.

Altitude	Chs.	
		Land, mountainous.
		Soil, sand and clay, 3rd rate.
		[fol. 236] Vegetation, grass, pine timber; oak and aspen brush.
		Alt. 8700 ft.
		Temp. 65°.

July 5th, 1903.

Having carefully adjusted the transit in all its parts. At the point for the 217th mile cor. May 8th, 1903, at 4h 27m A. M. l. m. t. I observe Polaris at eastern elongation, and mark a point in the line so determined on a plug driven in the ground N. of my station. At 7h A. M. May 8th, 1903, I lay off the azimuth of Polaris 1°30.9′ to the West and mark a point in the true meridian thus determined on a plug driven in the ground N. of my station.

The magnetic bearing of this meridian is N. 13° 30′ W.

This gives the magnetic declination 13° 30′ E.

I now lay off an angle of 90° from the meridian from the N. to the E. for the tangent to the parallel.

In all these observations and the subsequent turning of angles, the mean of four sights was used with the telescope reversed at each sight.

218th Mile

East on the tangent to the parallel.

Descending in pine timber.

	12.00	Leave timber bears N. E. and S. W.
	14.87	Wagon road from Costilla to Trinidad, via San Francisco Pass, bears N. E. and S. W.
	17.65	Stream 3 lks. wide, course S. W.
8650 ft.	18.97	N. .2 of a link from the tangent.

Set temporary astronomical monument, See page 478.

The line from this point was run through to the 6th astronomical station, on the 275th mile, where the falling was found to be 18.66 chs. N. [fol. 237] of the 37th parallel, as determined by astronomical observations on nights of Oct. 27th, 29th and 30th, 1902. This being outside of the limit of 3″ of arc allowed by the Hon. Commissioner the line was adjusted by applying the correction of 24.7 lks. per mile to the south, to bring it within said limit.

Altitude	Chs.	
	26.00	Foot of hill, leave small valley, bears N. E. and S. W.; ascend.
	66.32	On top of spur, slope N. E.; ascend along N. slope.
9500 ft.	79.54	Top of ridge bears N. E. and S. W., about 850 ft. above valley.
		Descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is 80.00 chs.
9490 ft.	80.00	N. .76 of a link,—Correction 18 lks. S. = 17.24 lks. S. from the tangent.
		Set temporary 218th mile cor.
		Land, mountainous.
		Soil, rocky, 3rd rate.
		Vegetation, pine timber; oak and aspen brush.
		Alt. 9490 ft.
		Temp. 70°.
		July 4th, 1903.
		N. B.—This line was corrected when we returned over it from the East, and the corners set on the true line, which accounts for the dates running contrary to the course of the line.

219th Mile

		S. 89° 59′ E. on the tangent to the parallel. Descending through scatering pine timber.
	43.00	Stadia point, thence by stadia measurement.
		Level, Rod 13.00 double = 2600 ft. + C. = 1.15 ft. = 2601.15 ft. = 39.41 chs. + 43.00 chs. =
[fol. 238]		84.41 chs. — 80.00 chs. = 2.41 chs. on 220th mile.
9000 ft.	75.00	Stream 3 lks. wide, course S. in ravine about 500 ft. deep; ascend.
	80.00	Comes on very steep N. slope in dense brush. I advance this cor.
		Land, mountainous.
		Soil, clay loam, and rocky, 3rd rate.
		Vegetation, pine and pinon timber, oak and aspen brush.

220th Mile

		S. 89° 59′ E. on the tangent to the parallel.
	2.41	Stadia point, thence by tape measurement.

Altitude	Chs.	
		Ascend steep.
	23.50	Top of ridge bears N. E. and S. W.
		Difference between measurements of 64.59 chs by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 64.64 chs.
		By 2nd set 64.54 chs.; the mean of which is 64.59 chs. + 39.41 stadia measurement = 104.00 chs. —80.00 chs. = 24.00 chs. on 220th mile
9500 ft.	24.00	N. 4 lks. — Correction of 50 lks. S. = 46 lks. S. from the tangent.
		Set temporary 219th mile cor. stamped 219.3 M. Alt. 9500 ft.
		Temp. 50°.
		Descend.
9100 ft.	65.00	Bottom of dry ravine, course S. W.; ascend.
	78.20	Timber road, bears N. E. and S. W.
	78.40	Wire fence bears N. E. and S. W. on low hills, bears N. E. and S. W.
9300 ft.	80.00	N. 7 lks. — Correction 67 lks. S. = 60 lks. South from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 220th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 220 M. stamped in the center. Raised a mound of stone
[fol. 239]		5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine tree 12 ins. dia. bears N. 26° E. 168 lks. dist. marked Colo., 220 M., B. T.
		An aspen tree 8 ins. dia. bears S. 24¼° E. 48 lks. dist. marked N. M., 220 M., B. T.
		A yellow pine tree 16 ins. dia. bears 33½° W. 48 lks. dist. marked N. M. 220 M., B. T.
		An aspen tree 8 ins. dia. bears [illegible] 39° W. 87 lks. dist. marked Colo., 220 M., B. T.
		This cor. stands on flat where timber has been cut for saw mill.
		Land, rolling and broken.
		Soil, clay loam, 3rd rate.
		Vegetation, pine and aspen timber and oak and aspen brush.
		Alt. 9,300 ft.
		Temp. 80°.

221st Mile

S. 89° 58' E. on the tangent to the parallel.

Through timber and brush, and over gently rolling ground.

Altitude	Chs.	
	26.00	Top of flat ridge bears N. E. and S. W. Descend gradually along N. slope.
	25.00	Ruins of old saw-mill in gulch about 10 chs. N.
	27.79	Bottom of dry ravine, course S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 14 lks., position of middle point:
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is
9050 ft.		80.00 chs.
9050 ft.	80.00	N. 12 lks.—Correction 92 lks. S.=80. lks. South from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 221st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. and S. and 221 M.
[fol. 240]		stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 12 ins. dia. bears S. 74½° 225 lks. dist. marked N. M., 221 M., B. T.
		A pine tree 16 ins. dia. bears N. 12½° W. 323 lks. dist. marked Colo., 221 M., B. T.
		No other trees within limits suitablt for bearing trees.
		Land, rolling.
		Soil, clay loam, 3rd rate.
		Vegetation, pine, pinon and aspen timber; and oak and aspen brush.
		Alt. 9,050 ft.
		Temp. 80°.

222nd Mile

S. 89° 57′ E. on the tangent to the parallel.

.10	Road to old saw-mill, bears S. E. and N. W.; ascend.
8.90	Top of ridge bears N. E. and S. W. about 100 ft. high.
13.76	Thence by stadia measurement.
	Level, Rod 16.16 single=1016 ft.+C.=1.15 ft. =1617.15 ft.=15.41 chs.+13.76 chs.=29.17 chs.
18.00	Dry gulch, course S. W. about 100 ft. deep; ascend.
29.17	Stadia point, on spur, slope S.
	Angle 2°+, 12.73 Rod, single=1273 ft.×.9988 =1271.41 ft.+C.=1.15 ft.=1272.62 ft.=19.28 chs.+48.45 chs.
48.45	**Stadia point,**

Altitude	Chs.	
		Angle 3° +. Rad 11.00 ft. single=1100 ft. × .9973=1097.03 ft. + C.=1.15 ft.=1098.18 ft.= 16.64 chs. + 48.45 chs.=65.09 chs.
	54.00	Bottom of dry ravine, course S. W. about 100 ft. deep.
	65.09	Stadia point, thence by tape measurement.
	68.00	Top of spur, slope S. 100 ft. above bottom of ravine.
9000 ft. [fol. 241]	80.00	Comes in dense aspen timber and brush. I advance this cor. Land, rough and broken. Soil, clay loam, 3rd rate. Vegetation, pine, pinon and aspen timber; oak and aspen brush.

223rd Mile

S. 89° 57′ E. on the tangent to the parallel.

	15.00	Wagon road from Tercio to Vermejo bears N. and S.
	35.00	Leave timber, bears N. E. and S. W.
		Difference between measurements of 68.67 chs. by 2 sets of chainmen is 6 lks. position of middle point.
		By 1st set 68.70 chs.
		By 2nd set 68.64 chs.; the mean of which is 68.67 chs. + Stadia 51.33 chs.=120.00 chs.—80.00 chs. =40.00 chs. on 223rd mile.
9500 ft.	40.00	N. 23 lks.—Correction 120 lks. S.=106 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 22nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 22.5 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		East Spanish Peak bears N. 11° 20′ E.
		Vermejo Peak bears S. 44° 05′ W.
		A pine tree 18 ins. dia. bears N. 55° W. 166 lks. dist. marked Colo., 222.5 M., B. T.
		A pine tree 14 ins. dia. bears N. 16° W. 234 lks. dist. marked Colo., 222.5 M., B. T.
		A pine tree 16 ins. dia. bears S. 50° E. 428 lks. dist. marked N. M., 222.5 M., B. T.
		This cor. stands on top of round hill.
		Alt. 9500 ft.
		Temp. 82°.
		Vegetation, pine, spruce and aspen timber; oak and aspen brush.

Altitude	Chs.	
	39.60	Enter pine and aspen timber, bears N. and S.
[fol. 242]	80.00	Comes on steep E. slope, in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, clay loam, 3rd rate.
		Vegetation, pine, spruce and aspen timber; oak, and aspen brush.

224th Mile

S. 89° 56' E. on the tangent to the parallel.
Ascend along steep N. slope.

21.00 Top of high ridge bears S. E. and S. W.
Difference between measurements of 66.00 chs. by 2 sets of chainmen is 4 lks. position of middle point.
By 1st set 66.02 chs.
By 2nd set 65.98 chs.; the mean of which is 66.00 chs.—40.00 chs. from last cor. to 80.60 chs. point=26.00 chs. on the 224th mile.

9500 ft. 26.00 N. 30 lks.—Correction 148 lks. S.=118 lks. S. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 223rd mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 223.325 M. stamped in the center. Raised a mound of stone 5 ft. high around the post.
Pits impracticable.
A pine tree 16 ins. dia. bears N. 7½° E. 152 lks. dist. marked Colo., 223.325 M., B. T.
A pine tree 14 ins. dia. bears S. 52¼° E. 25 lks. dist. marked N. M., 223.325 M., B. T.
A pine tree 12 ins. dia. bears S. 24⅛° W. 48 lks. dist. marked N. M., 223.325 M., B. T.
A pine tree 26 ins. dia. bears N. 16½° W. 176 lks. dist. marked Colo., 223.325 M., B. T.
Thence along N. slope in dense timber and brush.

80.00 Comes in dense brush on N. slope.
I advance this cor.; ascend.
Land, rolling and broken.
Soil, clay loam, 3rd rate.
[fol. 243] Vegetation, pine, spruce and aspen timber; oak and aspen brush.

Altitude	Chs.	225th Mile
		S. 89° 55′ E. on the tangent to the parallel. Ascend along N. slope. Head of ravine about 800 ft. deep, that runs N. to the Purgatory River at Tercio about 5 miles dist. Difference between measurements of 66.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 66.02 chs.
		By 2nd set 65.98 chs.; the mean of which is 66.00 chs.—54.00 chs., the dist. from last cor. to 80.02 chs. point=12.00 chs. on 225th mile.
9450 ft.	12.00	N. 39 lks.—Correction 170 lks. S.= 131 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 224th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 224.15 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 30 ins. dia. bears N. 8° E. 50 lks. dist. marked Colo., 224.15 M., B. T.
		A pine tree 12 ins. dia. bears S. 18° E. 16 lks. dist. marked N. M., 224.15 M., B. T.
		A pinon tree 12 ins. dia. bears S. 45° W. 84 lks. dist. marked N. M., 224.15 M., B. T.
		No trees within limits to N. W.
		This cor. on steep slope near top of ridge.
		The town of Tercio can be seen from it, about 5 miles to the N.
		Alt. 9450 ft.
		Temp. 85°.
		Ascend.
	15.00	Top of ridge bears N. E. and S. about 10 chs.: then W.
		Thence by stadia measurement,
[fol. 234]		Angle 4°—, Rod 12.00 ft. double=2400 ft. × .9951=2388.24 ft.+C.=1.15 ft.=2389.39 ft.= 36.20 chs.+15.00 chs.—51.20 chs.
	40.00	Head of gluch, course S. E.
	51.20	Stadia point, thence by tape measurement,
	53.00	On spur, slope S. E.
		Difference between measurements of 31.80 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 31.81 chs.
		By 2nd set 31.79 chs.; the mean of which is 31.80 chs.+36.20 chs., stadia=12.00 chs.=80.00 chs.

Altitude	Chs.	
9150 ft.	80.00	N. 49 lks.—Correction 191 lks. S.=142 lks. S. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 225th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 225 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. A pine tree 18 ins. dia. bears N. 48½° E. 56 lks. dist. marked Colo., 225 M., B. T. A pine tree 16 ins. dia. bears S. 70° W. 114 lks. dist. marked N. M., 225 M., B. T. A pine tree 12 ins. dia. bears N. 03¼° W. 87 lks. dist. marked Colo., 225 M., B. T. No tree suitable S. E. This cor. stands on W. slope in oak and scattering pine timber. Land, rough and broken. Soil, clay loam and rocky, 3rd rate. Vegetation, pine and pinon timber; oak and aspen brush. Alt. 9150 ft. Temp. 83°.

226th Mile

S. 89° 55′ E. on the tangent to the parallel.
Over rolling ground.

	22.00	Dry gulch, course S. E.
	40.00	Top of spur, slope S. E.; descend along W. slope.
[fol. 215]		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point. By 1st set 80.04 chs. By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
8900 ft.	80.00	N. 62 lks.—Correction 216 lks. S.=154 lks. S. from the tanget. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 226th mile cor. A brass cap on top of the pipe has raised letters Colo. on N., N. M. on S. and 226 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. A pine tree 18 ins. dia. bears S. 11° E. 186 lks. dist. marked N. M., 226 M., B. T.

Altitude	Chs.	
		A pine tree 12 ins. dia. bears N. 28° W. 130 lks. dist. marked Colo., 226 M., B. T.
		This cor. on steep W. Slope of Lorencitó Canon. Land broken.
		Soil, clay loam, and rocky, 3rd rate.
		Vegetation, pine, pinon and aspen timber; oak and aspen brush.
		Alt. 8900 ft.
		Temp. 80°.
		July 4th, 1903.

I examine the transit and compare the steel tapes with the standard, find all in adjustment and tapes of correct length.

227th Mile

July 3rd, 1903.

		S. 89° 54' E. on the tangent to the parallel. Descend along steep W. slope.
8500 ft.	50.00	Bottom of Lorencito Canon, stream 2 lks. wide, course N. E.
[fol. 246]		
	56.74	On flat bottom of canon, old saw-mill site. Stadia measurement from this point,
		Angle 8°=Rod 766 double=1532 ft. × .9806=1562.28 ft. + C.=1.14 ft.=1503.42 ft.=22.78 chs. + 56.74 chs.=79.52 chs.
	63.00	Same stream, course S. W.; ascend.
	79.52	Stadia point, on rocky spur, slope N. W.
		Difference between measurements of 57.22 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 57.24 chs.
		By 2nd set 57.20 chs.; the mean of which is 57.22 chs. + 22.78 chs.=80.00 chs.
8700 ft.	80.00	N. 76 lks.—Correction 240 lks. S.=164 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 227th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 227 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A yellow pine tree 14 ins. dia. bears N. 48° E.

Altitude	Chs.	
		84 lks. dist. marked Colo. 227 M., B. T. A pine tree 12 ins. dia. bears S. 21° E. 103 lks. dist. marked N. M., 227 M., B. T. A spruce tree 14 ins. dia. bears S. 54¾° W. 77 lks. dist. marked N. M., 227 M., B. T. A spruce tree 14 ins. dia. bears N. 43½° W. 84 lks. dist. marked Colo., 227 M., B. T. Land, broken and rocky. Soil, sandy and rocky, 3rd rate. Vegetation, pine, spruce and aspen timber; oak, aspen and willow brush. Alt. 8700 ft. Temp. 79°.

228th Mile

		S. 89° 53' E. on the tangent to the parallel. Descend.
	2.50	Dry ravine, 50 ft. deep, course S. E.; ascend.
[fol. 247]	17.00	Top of spur, slope S. E.; descend along south slope.
8400 ft.	75.41	Top of spur, slope S. E. Thence by stadia measurement. Level, Rod 9.38 double=1876 ft. + C.=1.15 ft. =1877.15 ft.=28.44 chs. + 75.41 chs.=103.85 chs.—80.00 chs.=23.85 chs. on the 229th mile.
	80.00	Comes on rough, brushy slope of canon. I advance this cor. Land, rough and broken. Soil, rocky, 3rd rate. Vegetation, pine, spruce and aspen timber; Oak and aspen brush.

229th Mile

		S. 89° 53' E. on the tangent to the parallel. Descend.
	14.00	Bottom of dry canon, about 300 ft. deep, course S.; ascend.
	23.85	Stadia point. Difference between measurements of 75.56 chs. by 2 sets of chainmen is 6 lks. position of middle point. By 1st set 75.59 chs. By 2nd set 75.53 chs.; the mean of which is 75.56 chs. + stadia 28.44 chs.=104.00 chs.—80.00 chs.=24.00 chs. on 229th mile.

Altitude	Chs.	
8550 ft.	24.00	N. 96 lks.—Correction 272 lks. S.=176 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 228th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 228.3 M stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 4 ins. dia. bears N. 34½° E. 93 lks. dist. marked Colo., 228.3 M., B. T.
		A pine tree 10 ins. dia. bears S. 85° E. 78 lks. dist. marked N. M., 228.3 M., B. T.
[fol. 248]		A pine tree 7 ins. dia. bears N. 33° W. 81 lks. dist. marked Colo., 228.3 M., B. T.
		No other tree within limits.
		Land, rough and broken.
		Soil, rocky, 3rd rate.
		Vegetation, pine, pinon and cedar timber; oak and aspen brush.
		Alt. 8550 ft.
		Temp. 82°.
		This cor. stands on south slope, rocky point of spur, about 300 ft. above bottom of Lorencito Canon.
	49.00	On spur, slope S., stadia measurement from this point,
		Angle 2° +. Rod 12.00 ft. double=2400 ft. × .9988=2397.12 ft. + C.=1.15 ft.=2398.27 ft. =36.33 chs. + 49.00 chs.=85.33 chs.—80.00 chs.=5.33 chs. on 230th mile.
	60.00	Dip rocky canon, course S.; ascend.
	80.00	Comes on steep W. slope.
		I advance this cor.
		Land, rough, broken and rocky.
		Soil, 3rd rate, rocky.
		Vegetation, pine, pinon and cedar timber; oak and aspen brush.

230th Mile

S. 89° 52' E. on the tangent to the parallel.

	5.33	Stadia point.
		Difference between measurements of 25.67 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 25.68 chs.

Altitude	Chs.	
		By 2nd set 25.66 chs.; the mean of which is 25.67 chs. + stadia 36.33 chs.=62.00 chs.—56.00 chs. (Dist. from last cor to 80.00 chs. point)=6.00 chs. on 230th mile.
8550 ft.	6.00	N. 111 lks.—Correction 292 lks. S.=181 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 229th mile cor. A brass cap on the top of the pipe has
[fol. 249]		raised letters Colo. on N., N. M. on S. and 229.075 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 18 ins. dia. bears N. 30½° E. 46 lks. dist. marked Colo., 229.075 M., B. T.
		A pine tree 8 ins. dia. bears S. 22½° E. 47 lks. dist. marked N. M., 229.075 M., B. T.
		A pine tree 5 ins. dia. bears S. 44½° W. 108 lks. dist marked N. M., 229.075 M., B. T.
		A pine tree 18 ins. dia. bears N. 36° W. 67 lks. dist. marked Colo., 229.075 M., B. T.
		East Spanish Peak bears N. 2° W.
		Alt. 8550 ft.
		Temp 86°.
	7.00	Top of ridge bears N. E. and S. W.
		Stadia measurement from this point.
		Angle 5°—, Rod 13.00 ft. double=2600 ft. × .9924=2580.28 ft. + C.=1.14 ft.=2581.42 ft. =3911 chs. + 7.00 chs.=46.11 chs.
	46.11	Stadia point in hollow, sloping N.; ascend.
	75.00	Top of ridge bears N. E. and S. W.
		Descend granually, along S. E. slope.
		Difference between measurements of 34.89 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 34.90 chs.
		By 2nd set 34.88 chs.; the mean of which is 34.89 chs. + 3911 chs., stadia=74.00 chs. from the last cor. + 6.00 chs.=80.00 chs.
8375 ft.	80.00	N. 129 lks.—Correction 314 lks. S.=185 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 6 ins. in the ground to bed rock for 230th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 230 M. stamped in the center. Raised a mound of stone 6 ft. base 2½ ft. high around the post. Pits impracticable.
[fol. 250]		A pine tree 18 ins. dia. bears N. 20¼° E. 135 lks. dist. marked Colo., 230 M., B. T.

Altitude	Chs.	
		A pine tree 10 ins. dia. bears S. 78½° E. 114 lks. dist. marked N. M., 230 M., B. T.
		A pine tree 16 ins. dia. bears S. 69¾° W. 118 lks. dist. marked N. M., 230 M., B. T.
		A pine tree 16 ins. dia. bears N. 42½° W. 100 lks. dist. marked Colo., 230 M., B. T.
		Land, broken and rough.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, pine and aspen timber; oak and aspen brush.
		Alt. 8375 ft.
		Temp. 86°.

231st Mile

		S. 89° 52′ E. on the tangent to the parallel.
	12.00	Thence by stadia measurement; Angle 2°—, Rod 12.95 ft. double=2590 ft. × .9988=2586.89 ft. + C.= 1.15 ft.=2588.04 ft. =39.21 chs. + 12.00 chs.=51.21 chs.
	47.00	Head of rocky canon about 200 ft. deep, course S.
	51.21	Stadia point, on rocky bluff, bears N. and S. Thence by tape across flat spur.
	58.50	On E. edge of rocky spur, bears N. W. and S. E. Stadia from this point; descend. Angle 11°—, Rod 6.60 ft. double=1320 [illegible] .9636=127195 ft. + C.=1.13 ft.=1273[illegible] =1929 chs. + 58.50 chs.=77.79 chs.
	74.00	Bottom of dry ravine, course S. E.; 350 ft. deep, below last stadia point; ascend.
	77.79	Stadia point, on low spur, slope S. Thence by tape, along brushy south slope. Difference between measurements of 21.50 chs. by 2 sets of chainmen is 2 lks. position of middle point, By 1st set 21.51 chs. By 2nd set 21.49 chs.; the mean of which is 21.50 chs. + 58.50 chs., stadia = 80.00 chs.
7950 ft.	80.00	N. 150 lks.—Correction 339 lks. S. = 189 lks. S. from the tangent, Set an iron pipe 3ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 231st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 231 M. stamped in the center.
[fol. 251]		Raised a mound of stone 5 ft. high around the post. Pits impracticable. A pine tree 16 ins. dia. bears N. 7° E. 129 lks. dist. marked Colo. 251 M., B. T.

Altitude	Chs.	
		A pine tree 12 ins. dia. bears S. 76½° E. 211 lks. dist. marked N. M., 231 M., B. T.
		A pine tree 14 ins. dia. bears N. 52° W. 243 lks. dist. marked Colo., 231 M., B. T.
		No tree within limit S. W.
		This cor. in oak brush on S. slope about 4 chs. N. of Lorencito creek.
		Land, rough and broken.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, pine, cedar and aspen timber.
		Oak and aspen brush.
		Alt. 7,950 ft.
		Temp. 85°.

232nd Mile

		S. 89° 51′ E. on the tangent to the parallel.
		Descend along brushy south slope.
7450 ft.	30.00	Bottom of Lorencito Canon, water in holes in bend, course S. W. to S. E.
	40.00	Low point of spur, slope S.
	54.00	Same stream, course N. E.
		Ascend along N. slope.
7550 ft.	76.00	Top of spur, slope N.; descend.
	79.60	Bottom of ravine from S.; road bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks., position of middle point;
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
7450 ft.	80.00	N. 172 lks.—Correction 264 lks. S. = 192 lks. S. from the tangent.
[fol. 252],		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 232nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 232 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high, around the post. Pits impracticable.
		A pine tree 16 ins. dia. bears N. 43¾° W. 480 lks. dist. marked Colo., 232 M., B. T.
		A pine tree 8 ins. dia. bears S. 41½° W. 423 lks. dist. marked N. M., 232 M., B. T.
		No other trees within limits.
		This cor. stands in mouth of canon from the S.
		Ruins of old lumber camp in main canon about 10 chs. N.
		Land, rough and broken.

Altitude	Chs.	
		Soil, rocky, clay and sand, 3rd rate. Vegetation, pine, cedar and aspen timber; oak and aspen brush.

On the afternoon of May 12th, 1903, I adjust the transit in all its parts.

At the point for the 232nd mile cor., at 4h 5m A. M. l. m. t. I observe Polaris at eastern elongation, May 13th, 1903, and mark a point in the line so found on a plug driven in the ground N. of my station.

At 7h A. M. May 13th, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian thus determined on a plug driven in the ground N. of my station.

The magnetic bearing of this meridian is N. 13° 30′ W.

This gives magnetic variation, 13° 30′ E.

I now lay off an angle 90° from the meridian from the N. to the E. for the tangent to the parallel.

In all these observations and the subsequent turning of angles, the mean of four sights was taken, with the telescope reversed at each sight.

[fol: 253]

N. B.—These observations on Polaris for meridian were taken and tangent cut out through timber and brush, before the corrections and subsequent adjustment of line was made, hence the difference in date.

233rd Mile

		East on the tangent to the parallel.
	1.00	Stream 2 lks. wide in bottom of ravine, course N. E. about 10 chs. to where it joins the Lorencito canon; ascend.
	10.00	Top of spur about 50 ft. high, slope N.
	23.00	Dry gulch, course N.
	37.13	On spur, slope N., stadia measurement, Angle 4° +. Rod 12.40 single = 1240 ft. × .9951 = 1233.92 ft. + C. = 1.15 ft. = 1235.07 ft. = 18.71 chs. + 37.13 chs. = 55.84 chs.
7650 ft.	55.84	Stadia point on high spur, slope N. E. Angle 3°+, Rod 8.30 ft. double = 1,660 ft. × .9973 = 1655.52 ft. + C. = 1.15 ft. = 1656.67 ft. = 25.10 chs. + 55.84 chs. = 80.94 chs.—94 chs. = 80.00 chs.
	73.00	Wagon road in canon, bears N. and S.

Altitude	Chs	
7450 ft.	76.00	Stream 3 lks. wide in bottom of canon, course N. about ¼ mile to Lorencito Canon which there turns to N. E.
	78.00	Foot of hill bears N. and S.; ascend.
7550 ft.	80.00	N. .76 of link—Correction 388 lks. S = 387.24 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 233rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 233 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A cedar tree 12 ins. dia. bears N. 9° W. 245 lks. dist. marked Colo., 233 M., B. T.
		A pine tree 14 ins. dia. bears S. 100 lks. dist. marked N. M., 233 M., B. T.
[fol. 254]		No other trees within limit.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.
		Vegetation, pine, cedar and aspen timber.
		Oak and aspen brush.
		Alt. 7550 ft.
		Temp. 84°.

234th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Ascend in dense oak brush.
	6.00	Top of spur, slope S. W. 200 ft. above gulch.
		Thence along S. slope in dense brush.
7600 ft.	34.00	Bottom of dry ravine, course S. W.; ascend.
7900 ft.	70.00	Top of spur, slope N., thence along N. slope.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point,
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is 80.00 chs.
7950 ft.	80.00	N. 3 lks.—Correction 413 lks. S. = 410 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 234th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 234 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs.	
		Pits impracticable.
		A pine tree 8 ins. dia. bears N. 73° E. 115 lks. dist. marked Colo., 234 M., B. T.
		A pine tree 18 ins. dia. bears S. 29½° E. 236 lks. dist. marked N. M., 234 M., B. T.
		A pine tree 16 ins. dia. bears N. 35½° W. 42 lks. dist. marked Colo., 234 M., B. T.
		No trees S. W. within limit suitable for bearing trees.
		This cor. stands near head of dry ravine course N.
		Land, rough and broken.
[fol. 255]		Soil, rocky, clay loam, 3rd rate.
		Vegetation, pine and spruce timber; oak, aspen and locust brush.
		Alt. 7959 ft.
		Temp. 80°

July 3rd, 1903.

I examine the adjustments of the transit and compare the steel tapes with the standard and find all correct and in adjustment.

July 2nd, 1903.

235th Mile

		S. 89° 59' E. on the tangent to the parallel.
		Along N. slope, near top of ridge.
	50.00	Dry canon near the head, course N.
	64.24	Wagon road bears W. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is 80.00 chs.
8200 ft.	80.00	N. 7 lks.—Correction 438 lks. S.=431 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 235th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 235 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.

Altitude	Chs.	
		This cor. stands on stony point on top of high ridge that bears SE. and SW.
		A pine tree 7 ins. dia. bears N. 58½° E. 29 lks. dist. marked Colo., 235 M., B.T.
		A pine tree 10 ins. dia. bears S. 34¼° E. 70 lks. dist. marked N.M., 235 M., B.T.
		A pine tree 8 ins. dia. bears S. 31½° W. 20 lks. dist. marked N.M., 235 M., B.T.
[fol. 256]		A pine tree 8 ins. dia. bears N. 61½° W. 22 lks. dist. marked Colo., 235 M., B.T.
		Land, rough and broken.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, pine, spruce and aspen timber; oak, aspen and locust brush.
		Much of the timber has been cut for railroad ties, and mining timbers.
		Alt. 8200 ft.
		Temp. 83°.

236th Mile

		S. 89° 58' E. on the tangent to the parallel. Descending along N. slope.
	9.30	On spur, slope N.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
8025 ft.	80.00	N. 12 lks.—Correction 463 lks. S.=451 S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 236th. mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 236 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 24 ins. dia. bears N. 91½° E. 336 lks. dist. marked Colo., 236 M., B. T.
		A pine tree 10 ins. dia. bears S. 66½° E. 242 lks, dist. marked N.M., 236 M., B.T.
		A pine tree 16 ins. dia. bears N. 12½° W. 296 lks. dist. marked Colo., 236 M., B.T.
		No tree SW. within limit.
		This cor. stands on ridge at low point, bears N. and S.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.

Altitude	Chs.	
[fol. 257]		Vegetation, pine, spruce and aspen timber; oak aspen and locust brush.
		Alt. 8025 ft.
		Temp. 84°.

237th Mile

		S. 89° 57' E. on the tangent to the parallel.
	9.00	Thence by stadia measurement,
		Angle 3°—, Rod 11.10 ft. single=1110 ft.× .9973=1107.00 ft.+C.=1.15 ft.= 1108.15 ft.= 16.79 chs.+9.00 chs.=25.79 chs.
	20.00	Bottom dry ravine, course NE.
	25.79	Top of spur, slope N.
		Angle 00° Rod 10.00 ft. single=1000 ft.+C =1.15 ft.=1001.15 ft.=15.17 chs.+25.79 chs. =40.96 chs.
	38.00	Bottom same ravine, 150 ft. deep, course SE.
	40.96	Stadia point, on ridge bears NW. and SE. Descend.
7800 ft.	80.00	Comes in ravine about 450 ft. deep, course N.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, pine, spruce and aspen timber; oak, aspen and locust brush.

238th Mile

		S. 89° 57' E. on the tangent to the parallel.
		Ascend through timber and brush.
		Difference between measurements of 56.04 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 56.06 chs.
		By 2nd set 56.02 chs.; the mean of which is 56.04 chs.+31.96 chs., stadia=88.00 chs.—80.00 chs.=8 chs. on the 238th mile.
7950 ft.	8.00	N. 20 lks.—Correction 489 lks. S.=469 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for
[fol. 258]		237th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N. N. M. on S. and 237.1 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 15 ins. dia. bears N. 21° E. 82 lks. dist. marked Colo., 237.1 M., B.T.

Altitude	Chs.	
		A pine tree 8 ins. dia. bears S. 54° E. 58 lks. dist. marked N.M., 237.1 M., B.T.
		A pine tree 10 ins. dia. bears S. 33¾° W. 87 lks. dist. marked N.M., 237.1 M., B.T.
		A pine tree 8 ins. dia. bears N. 11° W. 57 lks. dist. marked Colo., 237.1 M., B.T.
		Alt. 7950 ft.
		Temp. 84°
		Ascend.
	13.00	Top of spur, slope N.
		Thence by stadia measurement.
		Angle 2° + Rod 11.50 double=2300 ft.×.9988 =2297.24 ft.+C.=1.15 ft.=2298.39 ft.=34.82 chs.+13.00 chs.=47.82 chs.
	18.00	Bottom dry ravine, 150 ft. deep, course N.
	25.00	Top of spur, slope N.
	33.00	Bottom dry ravine 200 ft. deep, course N. W. Mexican cabin and water hole, about 20 chs. NW.
		Ascend.
	47.82	On high spur, slope N., thence by tape measurement, along N. slope.
	70.00	Top of ridge bears NE. and SW.
		Difference between measurements of 37.17 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 37.19 chs.
		By 2nd set 37.17 chs.; the mean of which is 37.18 chs.+34.82 chs., stadia=72.00 chs. from last cor.+8.00 chs.=80.00 chs.
7930 ft.	80.00	N. 27 lks.—Correction 512 lks. S.=485 lks. S from the tangent.
[fol. 259]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 238th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 238 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 16 ins. dia. bears N. 54° E. 87 lks. dist. marked Colo., 238 M., B. T.
		A pine tree 16 ins. dia. bears S. 44° E. 111 lks. dist. marked N.M., 238 M., B.T.
		A pine tree 24 ins. dia. bears S. 42° W. 7 lks. dist. marked N.M., 238 M., B.T.
		A pine tree 24 ins. dia. bears N. 80° W. 122 lks. dist. marked Colo.; 238 M., B.T.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.

Altitude	Chs.	
		Vegetation, pine, spruce and aspen timber; oak, aspen and locust brush.
		Alt. 7930 ft.
		Temp. 84°.

239th Mile

		S. 89° 56' E. on the tangent to the parallel.
	5.00	Dry gulch, course SE.; ascend.
	16.00	Top of ridge bears NW. and SE.; descend.
	45.00	Bottom of ravine, course NE.; ascend.
7900 ft.	76.00	Top of spur, slope NE.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 14 lks., position of middle point.
		By 1st set 80.07 chs.
		By 2nd set 79.93 chs.; the mean of which is 80.00 chs.
7720 ft.	80.00	N. 37 lks.—Correction 537 lks. S.=500 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 239th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 239th mile stamped in the center.
[fol. 260]		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree, 14 ins. dia. bears N. 51° E. 143 lks. dist. marked Colo., 239 M. B.T.
		A pine tree 30 ins. dia. bears S. 63° E. 41 lks. dist. marked N.M., 239 M., B.T.
		A pine tree 10 ins. dia. bears S. 35¾° W. 17 lks. dist. marked N.M., 239 M., B.T.
		A pine tree 12 ins. dia. bears N. 27° W. 126 lks. dist. marked Colo., 239 M., B.T.
		Land, rolling and broken.
		Soil, rocky, 3rd rate.
		Vegetation, pine, spruce and aspen timber; locust, oak and aspen brush.
		Alt. 7720 ft.
		Temp. 84°.

240th Mile

		S. 89° 55' E. on the tangent to the parallel.
		Descend.
	8.00	Stadia measurement from here.

Altitude	Chs.	
		Angle 5° —, Rod 11.10 ft. double=22.20 ft. × .9924=22.03.13 ft. + C =1.14 ft.=22.04.27 ft.= 33.39 chs. + 8.00 chs.=41.39 chs.
7420 ft.	34.00	Bottom of ravine about 300 ft. below cor., stream 3 lks. wide, course SE. Mexican houses just north of line.
	34.50	Wagon road bears NW. and SE.; ascend.
	41.39	Stadia point, thence by tape measurement.
7600 ft.	48.00	Top of spur slope S.; descend along S. slope.
	80.00	Comes on steep hillside.
		I advanced this cor.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.
		Vegetation, scattering pine and cedar timber; oak, aspen and locust brush.

241st Mile

		S. 89° 55' E. on the tangent to the parallel.
7380 ft.	5.00	Bottom of canon, stream 3 lks. wide, course NE.
[fol. 261]	5.50	Wagon road, bears N. E. and S. W.; ascend.
7450 ft.	20.00	Top of spur, slope N. E.; descend.
		Difference between measurements of 72.61 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 72.64 chs.
		By 2nd set 72.58 chs.; the mean of which is 72.61 chs. + 33.39 chs., stadia 106.00 chs. — 80.00 chs. = 26.00 chs. on 241st mile.
7430 ft.	26.00	N. 53 lks.—Correction 568 lks. S. = 515 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 240th mile cor. A brass cap on the top of the pipe has raised letters Colo., on N., N. M. on S. and 240.325 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 8 ins. dia. bears N. 42° W. 189 lks. dist. marked Colo., 240.325 M., B. T.
		A pine tree 14 ins. dia. bears N. 4° 51' W. 529 lks. dist. marked Colo., 240.325 M., B. T.
		No other trees suitable for bearing trees.
		Alt. 7439 ft.
		Temp 84°.
		Descend.

Altitude	Chs.	
7380 ft.	32.00	Bottom of Long Canon. Wagon road bears N. and S.
	35.50	R. R. track for timber. Trinidad to Catskill, bears N. E. and S. W.
	37.00	Stream 10 lks. wide, bottom of Long Canon, course N. W.
		Ascend.
	42.00	Top of spur, slope N., descend.
	55.00	Bottom of ravine, stream 2 lks. wide, course N. W.
		Ascend steep S. slope.
7700 ft.	75.00	Top of steep, brushy spur, slope S.; descend.
	[fols. 262 & 263]	Difference between measurements of 54.00 chs by 2 sets of chainmen is 4 lks., position of middle point.
		By 1st set 54.02 chs.
		By 2nd set 53.98 chs.; the mean of which is 54.00 chs. + 26.00 chs. = 80.00 chs.
7650 ft.	80.00	N. 62 lks. - Correction 586 lks. S. = 524 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 241st mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 241 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 14 ins. dia. bears S. 35½° E., 532 lks. dist. marked N. M., 241 M., B. T.
		No other trees within limit.
		This cor. stands in dense oak brush on south slope.
		Land, rough and broken.
		Soil, rocky, sand and clay, 3rd rate.
		Vegetation, scattering pine timber, oak and locust brush.
		Alt. 7650 ft.
		Temp. 83°.

242nd Mile

		S. 89° 54' E. on the tangent to the parallel.
		Descend.
7550 ft.	10.00	Dry ravine, course S.; ascend.
7980 ft.	40.00	Top of high ridge, bears N. E. and N. W.
		Thence along S. slope near top of ridge.
	78.00	Top of spur, slope S.

Altitude	Chs	
		Difference between measurements of 80.06 chs. by 2 sets of chainmen is 12 lks.; position of middle point.
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is 80.00 chs.
7950 ft.	80.00	S. 76 lks. — Correction 611 lks. S. = 535 lks. S. from the tangent.
[fol. 264]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 242nd mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 242 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 8 ins. dia. bears N. 33° E. 131 lks. dist. marked Colo., 242 M., B. T.
		A pine tree 16 ins. dia. bears S. 36½° E. 68 lks. dist. marked N. M., 242 M., B. T.
		A pine tree 20 ins. dia. bears S. 66° W. 32 lks. dist. marked N. M., 242 M., B. T.
		A pine tree 20 ins. dia. bears N. 52° W. 117 lks. dist. marked Colo.; 242 M., B. T.
		Land, rough and broken.
		Soil, rocky, 3rd rate.
		Vegetation, pine and spruce timber.
		Oak and locust brush.
		Alt. 7950 ft.
		Temp. 80°.

243rd Mile

		S. 89° 53' E. on the tangent to the parallel.
		Along south slope.
8000 ft.	22.50	On top of ridge bears N. and S.
		Thence by stadia.
		Angle 2° —, Rod 7.90 double = 1580 ft. × .9988 = 1578.10 ft. + C. = 1.15 ft. = 1579.25 ft. = 23.93 chs. + 22.50 chs. = 46.43 chs.
	27.00	Head of canon, course N. E.
	34.00	Top of spur, slope N.
	43.00	Bottom of ravine, 150 ft. deep, course N.; ascend.
	46.43	Stadia point on spur, slope N.
		Angle 60° Rod 10.00 ft. double = 2000 ft. + C. = 1.15 ft. = 2001.15 ft. = 30.32 chs. + 46.43 chs. = 76.75 chs.
7800 ft.	63.00	Bottom of canon 200 ft. deep, course N.; ascend.

Altitude	Chs	
[fol.265]	76.75	Stadia point on spur, slope N.
		Thence by tape measurement.
8050 ft.	80.00	N. 92 lks.—Correction 635 lks. S. = 543 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 243rd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 243 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 12 ins. dia. bears N. 40° E. 14 lks. dist. marked Colo.; 243 M., B. T.
		A pine tree 8 ins. dia. bears S. 33° E. 24 lks. dist. marked N. M., 243 M., L. T.
		A pine tree 8 ins. dia. bears S. 41° W. 107 lks. dist. marked N. M., 243 M., B. T.
		A pine tree 16 ins. dia. bears N. 21° 30' W. 30 lks. dist. marked Colo. 243 M., B. T.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, pine, spruce and cedar timber; oak, aspen and locust brush.
		Alt. 8050 ft.
		Temp. 75°.
		July 2nd, 1903.

I examine the adjustments of the transit and compare the steel tapes with the standard. Find all correct and in adjustment.

July 1st, 1903.

244th Mile

		S. 89° 53' E. on the tangent to the parallel.
	14.00	Bottom of dry ravine 150 ft. deep, course N.
	25.00	Top of spur, slope N.
	57.00	Stadia measurement from this point.
		Angle 00° Rod 12.30 double = 2460 ft. + C. = 1.15 ft. = 2461.15 ft. = 37.29 chs. + 57.00 chs. = 94.29 chs. — 80.00 chs. = 14.29 chs. on the 245th mile.
7850 ft.	80.00	Comes in canon, course N. about 200 ft. deep.
[fol. 266]		I advance this cor.
		Land, rough and broken.
		Soil, sand and clay, 3rd rate.

Altitude	Chs	
		Vegetation, pine, cedar and aspen timber.
		Oak, aspen and locust brush.

245th Mile

S. 89° 52' E. on the tangent to the parallel.
Ascend.

14.29 Stadia point on sharp spur, slope E.
Difference between measurements of 57.42 chs. by 2 sets of chainmen is 4 lks., position of middle point.
By 1st set 57.43 chs.
By 2nd set 57.39 chs.; the mean of which is 57.41 chs. + 37.29 chs., stadia = 94.70 chs. — 80.00 chs. = 14.70 chs. on the 245th mile.

8050 ft. 14.70 N. 114 lks.—Correction 650 lks. S. = 536 lks. S. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 244th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 244.184 M. stamped in the center.
Raised a mound of stone 5 ft. base 2 ft. high around the post.
Pits impracticable.
No trees suitable for bearing trees.
East one of Spanish Peaks bears N. 30° 15' W.
NW. face of Fishers' Peak bears N. 54½° E.
Alt. 8050 ft.
Temp. 70°.
Thence by stadia measurement.
Angle 7°. Rod 8.50 ft. double = 17.00 ft. × 9851 = 1674.67 ft. + C. = 1.14 ft. = 1675.81 ft. = 25.39 chs. + 14.70 chs. = 40.09 chs.

7900 ft. 30.00 Bottom of ravine about 250 ft. deep, stream 2 lks. wide, course N.; ascend.

7950 ft. 40.09 [64.267] Stadia point on spur, slope N.; coal cropping, and spring about 2 chs. N.
Angle 8°. + Rod 11.00 ft. double = 22.00 ft. × 9806 = 2157.32 ft. + C. = 1.14 ft. = 2158.46 ft. = 32.70 chs. + 40.09 chs. = 72.79 chs.

7900 ft. 45.00 Bottom of ravine stream 2 lks. wide, course N. W.
Ascend.

72.79 Stadia point, thence by tape measurement.

8150 ft. 80.00 N. 129 lks.—Correction 685 lks. S. = 556 lks. S. from the tangent.

Altitude	Chs.	
		Set an iron pipe 3 ins. dia 4 ft. long with flanges at the bottom 2 ft. in the ground for the 245th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 245 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pinion tree 8 ins. dia. bears S. 67° W. 38 lks. dist. marked N. M., 245 M., B. T.
		A pinion tree 8 ins. dia. bears N. 15° W. 53 lks dist marked Colo., 245 M., B. T.
		No other trees suitable for bearing trees.
		This cor. stands on steep south slope, in brush.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.
		Vegetation, pine, pinion and cedar timber; oak, aspen and locust brush.
		Alt. 8150 ft.
		Temp. 83°.

246th Mile

S. 89° 52' E. on the tangent to the parallel.
Descend.
Stadia measurement.
Angle 2° +, Rod 12.00 ft. double = 2,400 ft. × .9988 + 2397.12 ft. + C. = 1.15 ft. = 2398.27 ft. = 36.33 chs.

	12.00	Head of ravine, course SE.; ascend.
8200 ft.	36.33	On ridge bears N. W. and S. E.
[fol. 268]		Thence by tape measurement.
		Descend.
7800 ft.	80.00	Bottom of dry ravine, about 300 ft. deep, course N. W.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.
		Vegetation, pine, pinon and cedar timber.
		Oak, aspen and locust brush.

247th Mile

S. 89° 51' E. on the tangent to the parallel.
Ascend

	13.00	On spur, *slope* S.; thence along S. slope.
		Difference between measurements of 63.67 chs. by

Altitude	Chs.	
		2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 63.70 chs.
		By 2nd set 63.64 chs.; the mean of which is 63.67 chs. + 36.33 chs. stadia = 100.00 chs.— 80.00 chs. = 20.00 chs., on 247th mile.
8000 ft.	20.00	N. 155 lks.—Correction 716 lks. S. = 561 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 246th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 246.25 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 18 ins. dia. bears N. 42½° E. 19 lks. dist. marked Colo., 246.25 M., B. T.
		A pine tree 16 ins. dia. bears S. 49° E. 85 lks. dist. marked N. M., 246.25 M., B. T.
		A pine tree 17 ins. dia. bears S. 81° W. 96 lks. dist marked N. M., 246.25 M., B. T.
		A pine tree 19 ins. dia. bears N. 27½° W. 92 lks. dist. marked Colo., 246.25 M., B. T.
8100 ft.	27.00	Top of ridge bears N. W. and S. E.
		Descend along N. slope.
	60.00	Head of ravine, course N.; ascend.
	80.00	Comes in dense brush.
[fol. 269]		I advance this cor.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.
		Vegetation, pine and cedar timber; oak, aspen and locust brush.

248th Mile

		S. 89° 56′ E. on the tangent to the parallel.
		Ascend.
8100 ft.	10.00	Top of ridge bears N. and S.; descend.
7950 ft.	25.00	Bottom of ravine, course N. E. Wagon road and telephone line bears N. E. and S. W. Trinidad to Raton.
	25.30	Stream 2 lks. wide, course N. E.; ascend.
	30.00	Top of spur, slope N., 50 ft. high; descend.
	35.00	Dry gulch, course N.; ascend.
	43.50	Top of spur, slope N.
		Difference between measurements of 104.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.

Altitude	Chs.	
		By 1st set 104.50 chs.
		By 2nd set 103.95 chs.; the mean of which is 104.00 chs.; from last cor. + 20.00 chs. = 124.00 chs.—80.00 chs. = 44.00 chs. on 248th mile.
8100 ft.	44.00	N. 185 lks.—Correction 747 lks. S. = 562 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 247th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 247.55 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable. A pine tree 14 ins. dia. bears N., 50½° E. 87 lks. dist. marked Colo., 247.55 M., B. T. A pine tree 14 ins. dia. bears S. 58° E. 95 lks. dist. marked N. M., 247.55 M., B. T. A pine tree 16 ins. dia. bears S. 36¾° W. 32 lks. dist. marked N. M., 247.55 M., B. T. A pine tree 12 ins. dia. bears N. 31° W. 86 lks. dist. marked Colo., 247.55 M., B. T.
[fol. 270]		Descend.
	55.00	Bottom of ravine, 150 ft. deep, course N.; ascend.
	80.00	Comes in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky and sandy loam, 3rd rate.
		Vegetation, pine and spruce timber.
		Oak and aspen and locust brush.

249th Mile

		S. 89° 50' E. on the tangent to the parallel.
		Over ravines and spurs, drainage N.
	20.00	Bottom of ravine 100 ft. deep, course N.
		Difference between measurements of 62.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1 set 62.02 chs.
		By 2nd set 61.98 chs.; the mean of which is 62.00 chs., from last cor. + 44.00 chs. = 106.00 chs. — 80.00 chs. = 26.00 chs. on the 249th mile.
8050 ft.	26.00	N. 203 lks.—Correction 766 lks. S. = 563 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 248th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 248.325 M. stamped in the center.

Altitude	Chs.	
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 16 ins. dia. bears N. 47° E. 43 lks. dist. marked Colo., 248.325 M., B. T.
		A pine tree 18 ins. dia. bears S. 50° E. 24 lks. dist. marked N. M., 248.325 M., B. T.
		A pine tree 18 ins. dia. bears S. 40° W. 55 lks. dist. marked N. M., 248.325 M., B. T.
		A pine tree 16 ins. dia. bears N. 35½° W. 58 lks. dist. marked Colo., 248.325 M., B. T.
		Alt. 8050 ft.
		Temp. 84°.
		[fol. 271] Thence across spurs and gulches.
		Drainage to the north.
	80.00	Comes in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy and stony; 3rd rate.
		Vegetation, pine, spruce and cedar timber; oak, aspen and locust brush.

250th Mile

		S. 89° 49′ E. on the tangent to the parallel.
		Along N. slope, crossing gulches.
	17.00	Bottom of ravine, about 200 ft. deep, course N. about 10 chs., then N. W.; ascend.
8470 ft.	41.00	Top of high ridge bears N. and S.; descend.
		Difference between measurements of 98.00 chs. by 2 sets of chainmen is 14 lks. position of middle point,
		By 1st set 98.07 chs.
		By 2nd set 97.93 chs.; the mean of which is 98.00 chs., from the last cor. +26.00 chs. = 124.00 chs. —80.00 chs. = 44.00 chs. on the 250th mile.
8450 ft.	44.00	N. 235 lks.—Correction 796 lks. S. = 561 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 249th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 249.55 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 12 in. dia. bears N. 36° E. 143 lks. dist. marked Colo., 249.55 M., B. T.

Altitude	Chs.	
		A pine tree 8 ins. dia. bears S. 76° E. 108 lks. dist. marked N. M., 249.55 M., B. T.
		A pine tree 14 ins. dia. bears S. 36¾° W. 133 lks. dist marked N. M., 249.55 M., B. T.
		A pine tree 12 ins. dia. bears N. 53¼° W. 65 lks. dist. marked Colo., 249.55 M., B. T.
	[fol. 272]	Alt. 8450 ft.
		Temp. 84°.
		Thence along S. slope.
	60.00	Head of ravine, course S. E.
	80.00	Comes in gulch, course S. E., in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky and sandy.

251st Mile

		S. 89° 48′ E. on the tangent to the parallel.
		Ascend along S. slope.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen in 6 lks., position of middle point,
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs., from last cor. + 44.00 chs. = 124.00 chs. — 80.00 chs. = 44.00 chs. on 251st mile.
8150 ft.	44.00	N. 262 lks.—Correction 821 lks. S. = 559 lks. S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 250th mile cor. A brass cap on the top of the pipe has raised letters Colo., on N., N. M. on S., and 250.55 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 18 ins. dia. bears N. 7½° E. 60 lks. dist. marked Colo., 250.55 M., B. T.
		A pine tree 16 ins. dia. bears S. 22° E. 31 lks. dist. marked N. M., 250.55 M., B. T.
		A pine tree 16 ins. dia. bears S. 48½° W. 52 lks. dist. marked N. M., 250.55 M., B. T.
		A pine tree 18 ins. dia. bears N. 78° W. 25 lks. dist. marked Colo., 250.55 M., B. T.
		This cor. on S. slope, near top of divide
		Alt. 8150 ft.
		Temp. 82°.
	[fol. 273]	Ascend.

Altitude	Chs.	
8200 ft.	52.00	Top of divide, bears N. W. and S. E.; ascend.
	80.00	Comes in ravine, 150 ft. deep, course N. E.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy and rocky. 3rd rate.
		Vegetation, pine, spruce and aspen timber.
		Oak, aspen and locust brush.

252nd Mile

		S. 89° 48′ E. on the tangent to the parallel.
		Ascend.
	15.00	On spur, slope N.; descend.
		Difference between measurements of 69.61 chs. by 2 sets of chainmen is 6 lks., position of middle point,
		By 1st set 69.64 chs.
		By 2nd set 69.58 chs.; the mean of which is 69.61 chs., dist. from last cor.+44.00 chs.= 113.61 chs.—80.00 chs.=33.61 chs. on 252nd mile.
7800 ft.	33.61	N. 287 lks.—Correction 843 lks. S.=556 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 251st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 251.42 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands in small opening in brush on N. E. slope.
		No trees within limit.
		N. W. face of Fisher's Peake bears N. 16° 44′ E.
		East Spanish Peak bears N. 40° 36′ W.
		Alt. 7800 ft.
		Temp. 80°.
		Descend.
7700 ft.	39.00	Bottom of dry ravine, course N.; ascend.
8000 ft.	50.00	Top of high spur, slope N.; descend.
	80.00	Comes in dense brush.
		I advance this cor.
[fol. 274]		Land, rough and broken.
		Soil, rocky and sandy, 3rd. rate.
		Vegetation, scattering pine timber; oak and locust brush.

Altitude	Chs.	
		253rd Mile
		S. 89° 47′ E. on the tangent to the parallel. Difference between measurements of 62.39 chs. by 2 sets of chainmen is 4 lks., position of middle point.
		By 1st set 62.41 chs.
		By 2nd set 62.37 chs.; the mean of which is 62.39 chs., from the last cor. +33.61 chs.=96.00 chs.—80.00 chs.=16.00 chs. on 253rd mile.
	13.00	Bottom of ravine, course N. E.
7650 ft.	16.00	N. 313 lks.—Correction 866 lks. S.=553 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 252nd mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 252.2 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 24 ins. dia. bears N. 36½° E. 118 lks. dist. marked Colo., 252.2 M., B. T.
		A pine tree 24 ins. dia. bears S. 51½° E. 98 lks. dist. marked N. M., 252.2 M., B. T.
		No other trees within limit.
		July 1st, 1903.

On May 18th, 1903, I carefully adjust the transit in all its parts.

And at the point for 252nd mile cor.,

At 3h 44m A. M., l. m. t. May 19th, 1903, I observe Polaris at Eastern elongation and mark a point in the line so determined on a plug driven in the ground N. of my station.

At 7h A. M., May 19th, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West, and

[fol. 275]

mark a point in the true meridian on a plug driven in the ground North of my station.

The magnetic bearing of this meridian is N. 13° 30′ W.

This gives the magnetic variation 13° 30′ E.

I now lay off an angle of 90° from this meridian from the N. to the E. for the tangent to the parallel.

In all these observations and the subsequent turning of angles the mean of four sights was used with the telescope reversed at each sight.

Altitude Chs.

From the point for 252.2nd mile cor. I ran South 31.20 chs. and West 13.57 chs. to Darling's 80th mile cor., which I found under a wire fence, that bears E. and W. about 20 chs. west of the North end of the A. T. & S. F. R. R. Co.'s Raton tunnel. It was a sandstone 19 x 12 x 6 ins. in a stone mound and marked C. on N., 80 M., on E., N. M. on S., 1868 on W. I retraced the Darling line to the East to the top of the high mesa, but failed to find a cor. I also retraced the line to the West, found and destroyed the cors. to and including the 92nd mile cor., which stood near timber R. R. track in Long Canon. West of this I failed to find his cors. till I reached the 114th mile.

253rd Mile

June 30th, 1903.

East on the tangent to the parallel.

22.00 Top of spur, slope N.; descend.

26.90 Wagon road, bears N. and S.

28.40 Dry gulch, course N.

29.70 Atchison, Topeka and Santa Fe R. R. track bears N. E. and S. E. about 4 chs. south of the Wottoon Station sign-board and about 30 chs. North of the N. end of the Raton tunnel.

3.35 Top of ridge bears N. and S.

[fol. 276]

Thence by stadia measurement.

Angle 6° + Rod 6.20 double = 1240 ft. × .9891 = 1226.48 ft. + C. = 1.14 ft. = 1227.62 ft. = 18.60 chs. + 31.35 chs. = 49.95 chs.

49.95 Stadia point, thence by tape,

Difference between measurements of 45.40 chs. by 2 sets of chainmen is 2 lks., position of middle point,

By 1st set 45.41 chs.

By 2nd set 45.39 chs.; the mean of which is 45.40 chs. + 1860 chs., stadia = 64.00 chs., from last cor. + 16.00 chs. = 80.00 chs.

7950 ft. 80.00 N. .76 of a line—Correction 882 lks. S. = 881.24 lks. S. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 253rd mile cor.

A brass cap on the top of the pipe has raised letters Colo., on N., N. M. on S. and 253 M. stamped on the center.

Raised a mound of stone 5 ft. base 2 ft. high around the post.

Altitude	Chs.	
		Pits impracticable.
		This cor. on steep brush N. W. slope.
		A pinon tree 12 ins. dia. bears S. 42½ W. 247 lks. dist. marked 253 M., B. T.
		No other trees within limits.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scattering pine and pinon timber. Oak and locust brush.
		Alt. 7950 ft.
		Temp. 75°.

254th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Ascend steep.
8450 ft.	28.00	On edge of Bartlett Mesa, bears S. W. and N. E.
	40.00	Leave mesa bears N. W. and S. E.
		Thence by stadia; descend.
[fol. 277]		Angle 0°, Rod 13.00 ft. double = 2600 ft. + C. = 1.15 ft. = 2601.15 ft. = 39.41 chs. + 40.00 chs. = 79.41 chs.
8150 ft.	60.00	Hollow drains N.; ascend.
8450 ft.	79.41	Stadia point on mesa, bears N. E. and S. W.
		Difference between measurements of 40.59 chs. by 2 sets of chainmen is 8 lks. position of middle point,
		By 1st set 40.63 chs.
		By 2nd set 40.55 chs.; the mean of which is 40.59 chs. + 39.41 chs. = 80.00 chs.
8450 ft.	80.00	N. 3 lks.—Correction 907 lks. S. = 904 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 254th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 254 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		Fishers' Peak bears N. 1° W.
		East Spanish Peak bears N. 42° 40′ W.
		This cor. stands on the mesa.
		Land, rough and broken.
		Partly mesa or table land.
		Soil, sandy loam and rocky, 3rd rate.
		Vegetation, grass; scrub spruce and cedar along edge of cliff; oak brush on slope.
		Alt. 8450 ft.
		Temp. 82°.

Altitude	Chs.	
		255th Mile
		S. 89° 59′ E. on the tangent to the parallel.
		Over top of mesa.
8150 ft.	22.80	East edge of mesa, bears N. W. and S. E.
		Thence by stadia measurement,
		Angle 7° —Rod 12.80 double = 2560 ft. × .9851 = 2521.86 ft. + C. = 1.14 ft. = 2523.00 ft. = 38.22 chs. + 22.80 chs. = 61.02 chs.
	26.00	Foot of cliffs about 150 ft. high, bears N. W.
[61 27 8]		and S. E.
		Thence descend over broken rock and through brush.
	61.02	Stadia point, thence by tape; descend.
		Difference between measurements of 41.78 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 41.81 chs.
		By 2nd set 41.75 chs.; the mean of which is 41.78 chs. + 38.22 chs. = 80.00 chs.
7900 ft.	80.00	N. 7 lks.—Correction 932 lks. S. = 925 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 255th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 255 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limit.
		This cor. on N. slope.
		Land, rough and broken, and rocky.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass; oak and locust brush with a fringe of spruce and pinion along the cliff.
		Alt. 7900 ft.
		Temp. 82°.

		256th Mile
		S. 89° 58′ E. on the tangent to the parallel.
		Stadia measurement,
		Angle 7° + Rod 12.90 double = 2580 ft. × .9851 = 2541.56 ft. + C. = 1.14 ft. = 254.70 ft. = 38.52 chs.
7800 ft.	14.00	Bottom of dry ravine, course N. W.; ascend.

Altitude	Chs.	
	35.00	Foot of cliffs, bears N. W. and S. E.; ascend.
8450 ft.	38.52	Stadia point on top of mesa, bears N. W. and S. E.
[fol. 279]		Thence by tape measurement, across top of mesa
	54.00	East edge of mesa bears N. W. and S. E.
		Descend along steep brushy N. E. slope.
	80.00	Comes in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky and sandy loam, 3rd rate.
		Vegetation, grass on mesa; oak, aspen and florist brush; and scattering spruce and pine timber on N. W. slope.

257th Mile

S. 89th° 57′ E. on the tangent to the parallel.
Difference between measurements of 55.08 chs by 2 sets of chainmen is 4 lks. position of middle point.
By 1st set 55.10 chs.
By 2nd set 55.06 chs.; the mean of which is 55.08 chs. + 38.52 chs., stadia = 93.60 chs. − 80.00 chs. = 13.60 chs. on 257th mile.

8450 ft.	13.60	N. 13 lks.—Correction 961 lks. S. = 948 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 256th mile. cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 256.17 stamped in the center.
	—	Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A spruce tree 30 ins. dia. bears N. 68½° E. 39 lks. dist. marked Colo., 256.17 M., B. T.
		A spruce tree 20 ins. dia. bears S. 43¼° E. 126 lks. dist. marked N. M., 256.17 M., B. T.
		A spruce tree 16 ins. dia. bears S. 31¼° W. 41 lks. dist. marked N. M., 256.17 M., B. T.
		A white oak tree 10 ins. dia. bears N. 56° W. 91 lks. dist. marked Colo., 256.17 M., B. T.
		This cor stands on steep N. E. slope in heavy timber.
[fol. 280]		Alt. 8150 ft.
		Temp. 82°.
		Descend.
	25.00	Bottom of ravine, stream 1 lk. wide, course S. E.

Altitude	Chs.	
		50 ft. below cor.; ascend.
	27.00	Wagon road bears N. W. and S. E.
	30.00	Point of spur, slope S.
	33.00	Same road bears N. E. and S. W.
	36.00	Same gulch, course N. W.; ascend.
8250 ft.	55.00	Top of spur, slope N.; descend.
7950 ft.	74.50	Bottom of deep ravine, stream 5 lks. wide, course S. E., Lilly's Creek.
	76.00	Same road bears N. W. and S. E.; ascend.
		Difference between measurements of 66.50 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 66.54 chs.
		By 2nd set 66.45 chs.; the mean of which is 66.50 chs., from the last cor. + 13.50 chs. = 80.00 chs.
8000 ft.	80.00	N. 19 lks. — Correction 981 lks. S. = 962 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 257th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 257 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pine tree 18 ins. dia. bears N. 31° E. 124 lks. dist. marked Colo., 257 M., B. T.
		A pine tree 16 ins. dia. bears S. 82° E. 126 lks. dist. marked N. M., 257 M. B. T.
		A pine tree 12 ins. dia. bears S. 5° W. 98 lks. dist. marked N. M., 257 M., B. T.
		A pine tree 12 ins. dia. bears N. 18½° W. 147 lks. dist. marked Colo., 257 M., B. T.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
[fol 281]		Vegetation; spruce, pine and aspen timber; oak, aspen, locust and willow brush.
		Alt. 8000 ft.
		Temp. 83

258th Mile.

		S. 89° 37' E. on the tangent to the parallel.
		Descend along S. slope.
7950 ft.	12.00	Bottom of ravine, stream 2 lks. wide, course S. W.
		Ascend.
8500 ft.	46.50	Top of high ridge or butte, bears N. and S.; descend.
		Stadia measurement.

Altitude	Chs.	
		Angle 8° — Rod 12.95 ft. double = 2590 ft. × .9806 = 2539.75 ft. + C. = 1.14 ft. = 2540.89 ft. = 38.49 chs. + 46.50 chs. = 84.99 chs. — 80.00 chs. = 4.99 chs. on the 259th mile.
	80.00	Comes in dense brush on steep hillside.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, scattering pine and spruce timber.
		Oak, locust and aspen brush.

259th Mile

		S. 89° 56' E. on the tangent to the parallel.
	6.00	Bottom of ravine, course S. E.; ascend.
		Difference between measurements of 53.51 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 53.54 chs.
		By 2nd set 53.48 chs.; the mean of which = 53.51 chs. + 38.49 chs., stadia = 92.00 chs. — 80.00 chs. = 12.00 chs. on 259th mile.
8200 ft.	12.00	N. 28 lks. — Correction 1010 lks. S. = 982 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground for 258th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 258.15 M. stamped in the center.
[fol. 282]		Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable.
		A pine tree 12 ins. dia. bears N. 40° E. 56 lks. dist. marked Colo., 258.15 M., B. T.
		A pine tree 18 ins. dia. bears S. 48½° E. 68 lks. dist. marked N. M., 258.15 M., B. T.
		A pine tree 18 ins. dia. bears S. 71½° W. 83 lks. dist. marked N. M., 258.15 M., B. T.
		A pine tree 18 ins. dia. bears N. 25° W. 185 lks. dist. marked Colo., 258.15 M., B. T.
		Alt. 8200 ft.
		Temp. 83°.
		Ascend.
8250 ft.	20.00	On spur, slope S. E.; descend.
	65.00	Spring branch 1 link wide course S. E.; ascend.
		Difference between measurements of 68.00 chs. by 2 sets of chainmen is 10 lks. position of middle point.
		By 1st set 68.05 chs.

Altitude	Chs.	
		By 2nd set 67.95 chs.; the mean of which is 68.00 chs. from the last cor. + 12.00 chs = 80.00 chs.
7900 ft.	80.00	N. 37 lks. — Correction 1031 lks. S. = 994 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 259th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 259 M., stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pine tree 16 ins. dia. bears N. 49½° E. 147 lks. dist. marked Colo., 259 M., B. T.
		A pine tree 24 ins. dia. bears S. 25½° E. 117 lks. dist. marked N. M., 259 M., B. T.
		A pine tree 24 ins. dia. bears S. 65° W. 121 lks. dist. marked N. M., 259 M., B. T.
		A pine tree 16 ins. dia. bears N. 47° W. 198 lks. dist. marked Colo., 259 M., B. T.
[fol. 283]		This cor. stands on S. W. slope, in heavy timber.
		Land, rough and broken.
		Soil, sandy loam, 3rd rate.
		Vegetation, pine and spruce timber.
		Oak, aspen and locust brush.
		Alt. 7900 ft.
		Temp. 83°.

260th Mile

		S. 89° 55' E. on the tangent to the parallel.
		Ascend.
7950 ft.	5.00	Top of spur, slope S.
		Thence by stadia measurement.
		Angle 4° — Rod 13.00 ft. double = 26.00 ft. × .9951 = 2587.26 ft. + C. = 1.15 ft. = 2588.41 ft. = 39.11 chs. + 5.00 chs. = 44.11 chs.
7650 ft.	35.00	Bottom of canon, stream 4 lks. wide, course S. E.
		Small house about 2 chs. N.
	38.00	Wagon road bears N. and S.; ascend.
7700 ft.	44.11	Stadia point on spur, slope S.
		Descend, thence by tape measurement.
	60.00	Wagon road, bears N. E. and S. W.
7650 ft.	63.00	Chicorica Creek 10 lks. wide, course S. W.
		Ascend in dense brush.
	80.00	Comes in dense brush.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky, sandy loam, 3rd rate.

Altitude	Chs.	
		Vegetation, grass: scattering pine and aspen timber. Oak, aspen and locust brush.

261st Mile

S. 89° 55′ E. on the tangent to the parallel.
Ascend in dense oak brush.
Difference between measurements of 56.89 chs. by 2 sets of chainmen is 2 lks., position of middle point,
By 1st set 56.90 chs.
By 2nd set 56.88 chs.; the mean of which is 56.89 chs. × 39.11 chs. = 96.00 chs.—80.00 chs. = 16.00 chs. on the 261st mile.

7975 ft. [fol. 284]	16.00	N. 12 lks. — Correction 1060 lks. S. = 1008 lks. S. from the tangent, Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 260th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 260 2 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. This cor. stands on steep N. slope in timber and brush. An aspen tree 10 ins. dia. bears N. 22½° E. 70 lks. dist. marked Colo., 260.2 M., B. T. An aspen tree 10 ins. dia. bears S. 89° E. 34 lks. dist. marked N. M., 260.2 M., B. T. A white oak tree 8 ins. dia. bears S. 11° W. 46 lks. dist. marked N. M., 260.2 M., B. T. An aspen tree 8 ins. dia. bears N. 32° W. 36 lks. dist. marked Colo., 260.2 M., B. T. Alt. 7975 ft. Temp. 84°. Ascend in dense timber and brush. June 30th, 1903.

I examine the transit and compare the steel tapes with the standard, find tapes of correct length and instrument in adjustment.

June 29th, 1903.

	80.00	Comes on steep N. slope in dense timber and brush.

Altitude	Chs.	
		Land, rough and broken. Soil, sandy loam, 2nd rate. Vegetation, pine, spruce, aspen and oak timber. Oak, aspen, wild cherry and locust brush.

262nd Mile

		S. 89° 54′ E. on the tangent to the parallel. Ascend.
[fol. 285]	2.00	Foot of lava cliffs bears N. E. and S. W.; ascend.
	4.30	Top of cliffs about 200 ft. high on edge of mesa bears N. E. and S. W. Thence across mesa land; leave timber and brush. Difference between measurements of 80.00 chs. by 2 sets of chainmen is 16 lks., position of middle point, By 1st set 80.08 chs. By 2nd set 79.92 chs.; the mean of which is 80.00 chs., from last cor. + 16.00 chs. = 96.00 chs. — 80.00 chs. = 16.00 chs. on the 262nd mile.
8700 ft.	16.00	N. 65 lks. — Correction 1085 lks. S. = 1020 lks. S. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 261st mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 261.2 M., stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. No bearings. Thence over mesa land.
	75.80	Carpenter's house about 12 chs. N.
	78.15	Wagon road bears N. and S.
		Difference between measurements of 64.00 chs. by 2 sets of chainmen is nothing, the mean of which is 64 chs. from last cor. + 16.00 chs. = 80.00 chs.
8700 ft.	80.00	N. 76 lks. — Correction 1105 lks. S. = 1029 lks. S. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 262nd mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 262 M. stamped in the center.

Altitude	Chs.	
		Raised a mound of stone, 5 ft. base 2 ft. high around the post.
		[fol. 286] Pits impracticable.
		S. gable of Carpenter's house bears N. 22½° W. about 18.00 chs. dist.
		Chimney on square house bears S. 41½° E. about ½ mile dist.
		Round hill bears S. 28½° E. about 7 miles dist
		Land, gently rolling mesa.
		Soil, black loam, 2nd rate.
		Vegetation, grass; some of land cultivated.
		Alt. 8700 ft.
		Temp. 75°.

263rd Mile

		S. 89° 53′ E. on the tangent to the parallel.
		Over gently rolling mesa land.
		Cultivated fields N. and S. of line.
	78.67	Wagon road, bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks. position of middle point,
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
8675 ft.	80.00	N. 92 lks.—Correction 1130 lks. S. = 1038 lks S. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom 2 ft. in the ground for the 263rd mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 263 M. stamped in the center.
		Raised a mount of stone 5 ft. base, 2 ft. high around the post.
		Pits impracticable.
		Round hill bears S. 20¾° E. about 6 miles dist
		Chimney on square house bears S. 32½° W. about ½ mile dist.
		Land, gently rolling mesa.
		Soil, black loam, 2nd rate.
		[fol. 287] Vegetation, grass, used for grazing; cultivated land on each side of the line.
		Alt. 8675 ft.
		Temp. 80°.

Altitude	Chs.	
		264th Mile
		S. 89° 53′ E. on the tangent to the parallel. Descend.
	5.50	West edge of basin that becomes a pond in wet weather, bears N. and S. about 7 chs., each way.
	12.00	East edge of basin, bears N. and S.; ascend.
	20.00	Top of ridge bears N. and S.
		Thence over rolling hills.
	35.00	About 30 chs. south of this point found and destroyed Darling's 69th mile cor.
		Also found the 70th mile cor. and destroyed it.
		All we were able to find on this mesa.
		Difference between measurements of 66.28 chs. by 2 sets of chainmen is 2 lks.; position of middle point.
		By 1st set 66.29 chs.
		By 2nd set 66.27 chs.; the mean of which is 66.28 chs.
8700 ft.	66.28	East edge of mesa, bears NW. and SE.
		From this point made triangulation across Bear Canon, which has precipitous sides of lava rock, and the bottom covered with dense brush.
		Set flag on line across canon; ran base line S. 0° 7′ W. at right angles to the tangent 30.00 chs. from south end of base sight to north end and measure angle to flag across canon 72° 56′. Flag bears N. 73° 03′ E.
		Then Log. 30.00 chs. base=1.477121×Log tangent 72° 56′=10.512857=1.989978=97.72 chs. to Flag across Canon.
		97.72 chs.×66.28 chs.=164.00 chs.—160.00 chs.=4.00 chs. on 266th mile.
8400 ft. [fol. 288]	80.00	Comes in Bear Canon, impracticable to establish. Land, gently rolling, grass covered hills and rough rocky canon.
		Soil, sandy loam, and rocky, 2nd and 3rd rate. Vegetation, grass on hills; pine, spruce, aspen oak timber and brush in canon.
		265th Mile
		S. 89° 52′ E. on the tangent to the parallel. This mile comes all in Bear Canon, is very rough and covered with dense timber and brush.
8400 ft.	80.00	Comes at foot of wall of canon, bears NW. and SE., in dense brush; ascend.
		I advance this cor.

Altitude	Chs.	
		Land, rough, rocky. Soil, rocky, 3rd rate. Vegetation, pine, spruce, oak and aspen timber; oak, aspen, wild cherry and locust brush.

266th Mile

		S. 89° 52′ E. on the tangent to the parallel.
8700 ft	4.00	Triangulation point on top of wall about 300 ft. high, bears NW. and SE.
		N. 130 lks.—Correction 1180 lks. S.=1050 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom on bed rock for 265th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 265.05 M., stamped in the center. Raised a mound of stone 6 ft. base 2½ ft. high around the post. Pits impracticable.
		This cor. stands on rocky spur, at SW. cor of high mesa.
[fol. 289]		On the evening of May 21st, 1903, I carefully examine and adjust the transit in all its parts. At 3h 36m A. M. l.m.t., I observe Polaris at Eastern elongation, May 22nd, 1903, and mark a point in the line so determined on a plug driven in the ground N. of my station, which is near the point for 265th mile cor. At 7h 15m A. M., May 22nd, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a plug driven in the ground, North of my station.
		The magnetic bearing on the meridian is N. 13° 20′ W.
		This gives magnetic variation 13° 20′ E.
		I now lay off an angle of 90° from the North to the East, for the tangent to the parallel. In all these observations and the subsequent turning of angles, the mean of four sights was used, with the telescope reversed at each sight.

266th Mile continued

		East on the tangent to the parallel.
		Ascend gradually over rolling mesa land.
8730 ft.	48.00	Top of high ridge bears NW. and SE.; descend.
	53.00	On wall of rimrock, bears NE. and SW.
		Thence by stadia measurement; descend.

Altitude	Chs.	
		Angle 13°—Rod 9.00 ft. double=1800 ft.× .9494=1708.92 ft.+C.=1.12 ft.=1710.04 ft.= 25.91 chs.+53.00 chs.=78.91 chs.
	55.00	Foot of lava wall, bears NE. and SW., about 200 ft. high.
		Thence descend through timber and brush.
	78.91	Stadia point, thence by tape measurement. Difference between measurements of 50.09 chs. by 2 sets of chainmen is 4 lks., position of middle point.
		By 1st set 50.11 chs.
		By 2nd set 50.07 chs., the mean of which is
[fol. 290]		50.09 chs.+25.91 chs., stadia.=76.00 chs. from
		last cor.+4.00 chs.=80.00 chs.
8100 ft.	80.00	N. .76 of a link—Correction° 1204 lks. S.= 1203.24 lks.
		South from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 266th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 266 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A white oak tree 10 ins. dia. bears S. 46° E. 55 lks. dist. marked N.M., 266 M., B.T.
		A white oak tree 12 ins. dia. bears S. 9° W. 30 lks. dist. marked N.M., 266 M., B.T.
		A white oak tree 8 ins. dia. bears N. 58° W. 15 lks. dist. marked Colo., 266 M., B.T.
		No trees NE. suitable for bearing tree.
		This cor. in timber and brush, on E. slope.
		Land, rolling and broken.
		Soil, sandy loam and rocky, 3rd rate.
		Vegetation, grass on rolling mesa; and oak pine, spruce, aspen and cedar timber, oak, aspen and locust brush on slope.
		Alt. 8100 ft.
		Temp. 85°.

267th Mile

S. 89° 59′ E. on the tangent to the parallel.
Descend through timber and dense brush.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 14 lks., position of middle point.

Altitude	Chs.	
		By 1st set 80.07 chs. By 2nd set 79.93 chs.; the mean of which is 80.00 chs.
7400 ft.	80.00	On spur, slope SE. N. 3 lks.—Correction 1228 lks. S.=1225 lks. S. from the tangent.
[fol. 291]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 267th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N.M. on S. and 267 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable. A cedar tree 8 ins. dia. bears N. 45¾° E. 402 lks dist. marked Colo., 267 M., B.T. No other trees within limit. Land, rough and broken. Steep SE. slope from mesa. Soil, rocky clay loam, 3rd rate. Vegetation, scattering pine, cedar and aspen timber. Oak, aspen and locust brush. Alt. 7400 ft. Temp. 84°.

268th Mile

S. 89° 59° E. on the tangent to the parallel.
Descend.
Stadia measurements.
Angle 7°—Rod 12.70 ft. double=2540 ft. X .9851=2502.15 ft.+C.=1.14 ft.=2503.29 ft.=37.92 chs.

	22.00	Bottom of dry ravine 300 ft. deep, course SE. ascend.
	37.92	Stadia point on spur, slope SE. Thence by tape. Difference between measurements of 42.08 chs. by 2 sets of chainmen is 4 lks., position of middle point, By 1st set 42.10 chs. By 2nd set 42.06 chs.; the mean of which is 42.08 chs. + 37.92 chs.; stadia=80.00 chs.
6700 ft.	80.00	N. 7 lks.—Correction 1253 lks. S.=1246 lks. S. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 268th mile cor.

Altitude	Chs.	
[fol. 292]		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 268 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		No trees within limits.
		Land rough and broken.
		Soil, clay loam, 3rd rate.
		Vegetation, scattering pine, pinon and cedar timber; oak, aspen and locust brush.
		Alt. 6700 ft.
		Temp. 80°.
		June 29th, 1903.

269th Mile

June 28th, 1903.

		S. 89° 58' E. on the tangent to the parallel.
		Descend.
	9.00	Creek bottom, bears N. E. and S. W.
		Wagon road, bears N. E. and S. W.
6690 ft.	10.00	San Ysidro Creek, 15 lks. wide, course N. E.; ascend.
	48.00	Foot of steep bluff, bears N. E. and S. W.; ascend.
	50.00	Coal cropping bears N. E and S. W.
6790 ft.	52.00	Top of ridge bears N. E. and S. W.; descend.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point,
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is 80.00 chs.
6600 ft.	80.00	N. 12 lks.—Correction 1278 lks. S. = 1266 lks. S. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 269th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 269 M. stamped in the center.
[fol. 293]		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pinon tree 10 ins. dia. bears S. 27½° W. 15 lks. dist. marked N. M., 269 M., B. T.

Altitude	Chs.	
		No other trees within limit suitable for bearing trees.
		Land, rolling and broken.
		Soil, clay loam, and stony, 3rd rate.
		Vegetation, pinon, cedar and aspen timber.
		Oak and aspen brush.
		Alt. 6600 ft.
		Temp. 75°.

270th Mile

		S. 89° 57' E. on the tangent to the parallel.
		Ascend:
	6.00	Top of spur, slope S. E.; descend.
	35.00	Foot of hills bears N. E. and S. W.; bottom dry creek, dry water-course 8 lks. wide, course N. E.
	55.00	Darling's astronomical monument No. 2 bears South about 20 chs. dist. This monument is a cedar post, 12 ins. square and 8 ft. high, marked Colo. on N., 1868 on E., New Mexico on S., and 37° N. L. on W.
		I destroy these marks and retrace this line to the west to foot of mesa. Failed to find any more corners.
		Also retrace the Darling line from his monument No. 2, to the East.—Failed to find any corners, till I reach his 58th mile cor. at Trinchera Creek.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 80.04 chs.
		By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
6300 ft.	80.00	N. 19 lks.—Correction 1302 lks. = 1283 lks. S. From the tangent,
		Set temporary 270th mile cor.
		[fol. 294] See page 413.
		Land, rolling.
		Soil, clay loam, 3rd rate.
		Vegetation, grass; scattering pinon timber; and oak and locust brush.
		Alt. 6300 ft.
		Temp. 78°.

Altitude	Chs.	
		271st Mile
		S. 89° 57′ E. on the tangent to the parallel.
		Across little valley.
	3.50	Dry gulch, course N.; house about 30 chs. S. W.
	20.00	Foot of hills bears N. E. and S. W.; ascend.
	40.00	Top of ridge about 100 ft. high bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
6350 ft.	80.00	N. 27 lks.—Correction 1327 lks. S. = 1300 lks. S. from the tangent.
		Set temporary 271st mile cor.
		Land, rolling.
		Soil, clay loam, 2nd rate.
		Vegetation, grass; oak and locust brush.
		Alt. 6350 ft.
		Temp. 80°.

		272nd Mile
		S. 89° 56′ E. on the tangent to the parallel.
		Descend over rolling ground.
	15.00	Dry gulch, course N. E.
	30.00	Top of low ridge, bears N. E. and S. W.
	67.50	Gulch, water in holes, course N. E.
	77.00	Road to Trinchera, bears N. E. and S. W.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is nothing; the mean is 80.00 chs.
6150 ft. [fol. 295]	80.00	N. 37 lks.—Correction 1352 lks. S. = 1315 lks. S. from the tangent.
		Set temporary 272nd mile cor.
		Land, rolling.
		Soil, clay loam, 2nd rate.
		Vegetation, grass and oak brush.
		Alt. 6150 ft.
		Temp. 82°.

		273rd Mile
		S. 89° 51′ E. on the tangent to the parallel.
		Ascend over rolling land.
	77.00	In hollow, drains N.; ascend.

Altitude	Chs.	
		Difference between measurements of 80.00 chs by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
6100 ft.	80.00	N. 49 lks.—Correction 1376 lks. S. = 1327 lks. S. from the tangent.
		Set temporary 273rd mile cor.
		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and oak brush.
		Alt. 6100 ft.
		Temp. 82°.

274th Mile

S. 89° 55' E. on the tangent to the parallel.
Ascend over rolling land.

3.00	Top of ridge bears N. E. and S. W., 50 ft. high
30.00	Wagon road, bears N. E. and S. W.
40.00	Brow of hill bears N. E. and S. W.; descend

Difference between measurements of 80.00 chs by 2 sets of chainmen is 4 lks., position of middle point,
By 1st set 80.02 chs.
By 2nd set 79.98 chs.; the mean of which is 80.00 chs.

6050 ft.	80.00	N. 62 lks.—Correction 1401 lks. S. = 1339 lks S. from the tangent.
[fol. 296]		Set temporary 274th mile cor.
		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and oak brush.
		Alt. 6050 ft.
		Temp. 78°.

June 28th, 1903.

275th Mile

S. 89° 54' E. on the tangent to the parallel. The intersection with a meridian run North from Astronomical Station No. 6 at Trinchera Creek comes at 34.00 chs. in this mile. This station No. 6, was found to be 29.88 chs. S. of this point on the tangent.

Altitude Chs

The off-set being 72 lks. N., makes point on parallel 30.60 chs. N. of station. This station was found by astronomical observations on the nights of Oct. 28th, 29th and 30th, 1902, to be in Lat. 36° 59′ 52.19″ N. or 11.96 chs. South of the 37th parallel. Therefore, this point on the projected line from the West is 18.64 chs. N. of the 37th parallel and 14.04 chs. outside of the limit of 3″ of arc. As it is impracticable to place astronomical monument on this meridian, as it comes in cultivated land, and near R. I. Surveyor's house, the monument was moved West and at

6050 ft. 12.62 N. 64 lks.—Correction 1406 lks. S. = 1342 lks. S. from the tangent.

Set temporary astronomical monument at 458 lks. N. of the 37th parallel, as determined by astronomical observations, being just within the limit of 3″ arc, allowed by the Hon. Commissioner

For description of permanent monument, see page 415.

June 28th, 1903.

[fol. 297]

At a point 5 lks. South of the point for temporary 174th mile cor. and due West of the point for temporary astronomical monument No. 6, having previously examined the transit and found it to be in perfect adjustment, both as to the level and the collimation, on May 25th, 1903, at 3h 21m A. M. l. m. t., I observe Polaris at Eastern elongation and mark a point in the meridian so determined on a plug driven in the ground N. of my station.

At 7h 20m A. M., May 25th, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian thus determined on a plug driven in the ground north of my station. The magnetic bearing of the true meridian is N. 13° 15′ W.

This gives magnetic variation, 13° 15′ E.

I now lay off 90° from the meridian from the N. to the East for the tangent to the parallel.

In all these observations and the subsequent turning of angles, the mean of four sights was used, with the telescope reversed at each sight.

Altitude	Chs.	275th Mile Continued
		East on the tangent to the parallel.
		Across Creek bottom.
	15.40	Road to the Plaza (once known as Brazil), bears N. and S. E.
	16.00	Wire fence bears N. and S. E., enter R. L. Survant's field.
	16.30	Irrigating ditch, bears N. and S. E.
	33.00	Survant's house about 3 chs. South.
	34.00	Darling's 58th mile cor. bears South 15.10 chs. dist.
		A basalt or trap rock 20 x 12 x 10 ins. set in ground and marked C. on N., 58 M. on E., N. M. on S. and 1868 on W. faces.
		I destroy this cor.
	37.50	Dry bed of Trinchera Creek 25 lks. wide, course N.
[fol. 298]	45.00	Foot of lava bluff about 60 ft. high, bears NE. and SW.
		Leave field and creek bottom; ascend.
	47.75	Top of bluff, bears NE. and SW.
		Thence over gently rolling, valley land.
	75.00	Foot of hills bears NE. and SW. Leave valley; ascend.
9		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 80.01 chs.
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
6150 ft.	80.00	N. .76 of a link from the tangent,
		Set temporary 275th mile cor.
		Land, creek bottom, and valley.
		Soil, sandy loam, 2nd and 3rd rate.
		Vegetation, grass, cultivated crops, alfalfa principally. Oak, aspen and willow brush along creek.
		N. B.—The subsequent adjustment of this line to the 37th parallel places Survant's house just North of the line in Colorado. See page 416.

276th Mile

		S. 89° 59' E. on the tangent to the parallel.
	4.00	A remarkable basalt or trap dyke resembles a wall laid up by man. Extends across the country about 4 miles, bears N. 80° E. and S. 80° W.
		Descend along S. slope.
	60.00	Dry gulch, course NE.; ascend.

Altitude	Chs.	
		Along N. base of volcanic cone.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point.
		By 1st set 80.02 chs.
		By 2nd set 79.98 chs., the mean of which is 80.00 chs.
6175 ft.	80.00	N. 3 lks. from the tangent.
		Set temporary 276th mile cor.
[fol. 299]		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and oak brush.
		Alt. 6175 ft.
		Temp. 70°.

277th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Descend along N. slope of volcanic cone in oak brush.
	8.00	Bottom of dry gulch, 30 ft. deep, course N.; ascend.
	20.00	Top of low ridge bears NW. and SE.; descend.
	35.00	Foot of hills bears NW. and SE.; enter small valley.
	36.00	Wagon road, bears NW. and SE.
	57.60	Road, bears NE. and SW.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is nothing; the mean is 80.00 chs.
6100 ft.	80.00	N. 7 lks. from the tangent.
		Set temporary 277th mile cor.
		Land, rolling and valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and oak brush.
		Alt. 6100 ft.
		Temp. 75°.

278th Mile

		S. 89° 58′ E. on the tangent to the parallel.
	.50	Dry bed of stream 15 lks. wide, course NW. about 3.00 chs. then NE.
	3.00	Foot of hill bears N. and S.; ascend.
	8.00	Top of bluff about 50 ft. above valley, bears NE. and SW.
		Thence over rolling ground.
	36.00	Road bears N. and S.

Altitude	Chs.	
	42.00	Gulch, water in holes, banks 15 ft. high, course N.
		Ascend.
	50.00	Enter brush and scattering timber, bears N. E. and S. W.
[fol. 300]	80.00	Comes on steep hillside in dense brush.
		I advance this cor.
		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass; oak brush, and scattering pinon timber.

279th Mile

		S. 89° 57' E. on the tangent to the parallel.
	6.00	Top of hill bears N. W. and S. E. about 100 ft. above bottom of gulch.
		Difference between measurement of 88.00 chs. by 2 sets of chainmen is 6 lks. position of middle point,
		By 1st set 88.03 chs.,
		By 2nd set 87.97 chs.; the mean of which is 88.00 chs.—80.00 chs. — 8.00 chs. on the 279th mile.
6200 ft.	8.00	N. 13 lks. from the tangent.
		Set temporary 278th mile cor., marked 278.1 M.
		Land, rolling.
		Soil, sandy and stony, 3rd rate.
		Vegetation, grass; oak brush and scattering pinon timber.
		Alt. 6200 ft.
		Temp. 78°.
	14.00	Dry ravine about 30 ft. deep, course N. W.; ascend over low brush covered hills.
	80.00	Comes in dry gulch, course N. W.
		I advance this cor.
		Land, rolling.
		Soil, sandy loam, and stony, 3rd rate.
		Vegetation, grass; oak brush and scattering pinon timber.

280th Mile

		S. 89° 57' E. on the tangent to the parallel.
		Ascend.
	5.80	Top of ridge bears N. E. and S. W.
[fol. 301]		Difference between measurements of 78.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,

Altitude	Chs.	
		By 1st set 78.02 chs.
		By 2nd set 77.98 chs.; the mean of which is 78.00 chs., from the last cor. + 8.00 chs.—86.00 chs.—80.00 chs. = 6.00 chs. on 280th mile.
6250 ft.	6.00	N. 19 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 279th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 279.075 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high, around the post.
		Pits impracticable:
		No trees suitable for bearing trees.
		Alt. 6250 ft.
		Temp. 75°.
		May 25th, 1903.

May 26th, 1903, rain. No line run.
I examine and adjust the transit and compare the steel tapes with the standard. Find them all correct.
Descend.

	19.25	Dry gulch, course N.; leave brush, bears N. W. and S. E.
	56.00	Dry gulch, course N. W.
	60.90	Wagon road, bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks., position of middle point:
		By 1st set 80.03 chs.
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
5950 ft.	80.00	N. 27 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 280th mile cor.
[fol. 302]		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 280 M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		A box elder tree 10 ins. dia. bears N. 49° 20′ E. 141 lks. dist., marked Colo., 280 M., B. T.
		No other trees within limit.
		A Mexican cabin about ½ mile N.
		Land, rolling.

Altitude	Chs.	
		Soil, sandy loam.
		Vegetation, grass and oak brush.
		Alt. 5950 ft.
		Temp. 60°.

281st Mile

		S. 89° 56′ E. on the tangent to the parallel.
	1.50	Dry bed of stream 20 lks. wide, course N.
		Ascend.
	10.00	Enter timber and brush, bears N. E. and S. W.
	35.00	Darling's 52nd mile cor. bears S. 11.80 chs. dist.
		I destroyed this cor. The first we have found
		East of his 58th mile cor.
	36.60	Top of ridge bears N. and S., 300 ft. above gulch.
		Thence over pinon hills.
	43.00	Dry ravine, course N.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point,
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs., the mean of which is 80.00 chs.
6120 ft.	80.00	N. 37 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 281st mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 281 M. stamped in the center.
[fol. 303]		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pit impracticable.
		A pinon tree 8 ins. dia. bears N. 54° W. 180 lks. dist. marked Colo., 281 M., B. T.
		No other trees suitable for bearing trees within limit.
		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, pinon timber; oak and aspen brush.
		Alt. 6120 ft.
		Temp. 68°.

282nd Mile

		S. 89° 55′ E. on the tangent to the parallel.
		Descend.
	2.00	Dry gulch; course N. E.

Altitude	Chs.	
	3.00	Dry ravine, course N., 50 ft. deep; ascend.
	48.00	Thence by stadia measurement, Angle 8° + Rod 9.75 ft. double = 1950 ft. × .9806 = 1912.17 ft. + C. = 1.14 ft. = 1913.31 ft. = 28.99 chs. + 48.90 chs. = 77.89 chs.
	54.00	Bottom of dry ravine, course N.
	77.89	Stadia point, thence by tape. Difference between measurements of 51.01 chs. by 2 sets of chainmen is 2 lks., position of middle point, By 1st set 51.02 chs., By 2nd set 51.00 chs.; the mean of which is 51.01 chs. + 28.99 chs., stadia = 80.00 chs.
6450 ft.	80.00	N. 49 lks. from the tangent, Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 282nd mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 282 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
[fol. 304]		Volcanic cone at Watervale station on the Colorado & Southern R. R. bears N. 7° 05′ W. about 1 mile dist. A volcanic cone bears N. 55° 40′ W. A volcanic cone bears S. 84° 21′ W. about 7 mile dist. This cor. stands on N. slope in dense oak brush. Land, rough and broken. Soil, sandy and rocky, 3rd rate. Vegetation, grass, oak brush and scattering pinon timber. Alt. 6450 ft. Temp. 72°.

283rd Mile

S. 89° 55′ E. on the tangent to the parallel.
Ascend.

	29.70	Top of spur, slope N. E. Thence by stadia measurements, Angle 4 —Rod 13.00 ft. double=2600 ft. × .9951=2587.26 ft. + C.=1.15 ft.=2588.41 ft.=39.21 chs. + 29.70 chs.=68.91 chs.
6850 ft.	68.91	Stadia point on sharp brushy spur, slope N.

Altitude	Chs.	
		Angle 8° + Rod. 8.35 ft. double=1670 ft. × .9806=1637.60 ft. + C.=1.14 ft.=1638.74 ft.=24.82 chs. + 68.91 chs.=93.73 chs.—80.00 chs.=1373 chs. on 284th mile.
6550 ft.	80.00	Comes in dry canon about 300 ft. below top of spur, course N.
		I advance this cor.
		Land, rough and broken.
		Soil, rocky, clay loam, 3rd rate.
		Vegetation, dense oak and aspen brush.

284th Mile.

S. 89° 54′ E. on the tangent to the parallel.

13.73 On top of wall of rim rock, about 200 ft. high, bears N. E. and S. W.

Thence by tape.

7075 ft. 14.00 N. 64 lks. from the tangent,

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 283rd mile cor.

[fol. 4005]

A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 283.175 M. stamped in the center.

Raised a mound of stone, 5 ft. base, 2 ft. high around the post.

Pits impracticable.

A pinon tree 8 ins. dia. bears S. 80° 26′ E. 177 lks. dist. marked N. M., 283.175 M., B. T.

No other trees within limit, suitable for bearing trees.

Volcanic cone at Watervale bears N. 42° 30′ W.

This cor. stands on high, rocky spur.

Alt. 7075 ft.

Temp. 70°.

Thence by stadia.

Angle 11°—Rod 12.60 ft. double=2520 ft. × .9636=2428.27 ft. + C.=1.13 ft.=2429.40 ft.=36.81 chs. + 14.00 chs.=50.81 chs.

18.00 Foot of wall about 75 ft. high bears N. W. and S. E.

Thence along N. slope in dense brush.

27.00 Springs just North of line.

50.81 Stadia point, thence by tape.

6850 ft. 70.00 Bottom of ravine course N.; ascend.

Difference between measurements of 29.19 chs. by 2 sets of chainmen is 2 lks., position of middle point,

Altitude Chs.

By 1st set 29.26 chs.
By 2nd set 29.18 chs., the mean of which is 29.19 chs. + 36.81 chs., stadia=66.00 chs. from last cor. + 14.00 chs.=80.00 chs.

6500 ft. 80.00 N. 76 lks. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 284th mile cor.
A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 284th M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post.
[fol. 306] Pits impracticable.
A pinon tree 10 ins. dia. bears N. 60° E. 57 lks. dist. marked Colo., 284 M. B. T.
A pine tree 12 ins. dia. bears S. 41° W. 283 lks. dist. marked N. M., 284 M., B. T.
No other trees within limit suitable for bearing trees.
Extreme N. end of rocky point of mesa bears N. 69° 26′ W. about 1 mile dist.
Land, rough, mountainous.
Soil, rocky clay loam. 3rd rate.
Vegetation, oak, aspen and wild cherry brush; scattering pine and aspen timber.
Alt. 6500 ft.
Temp. 54°.

May 27th, 1903.

I examine the transit and find it in adjustment; compare the steel tapes, with the standard and find them all of correct length.

285th Mile

S. 89° 53′ E. on the tangent to the parallel.
Ascend along brushy N. slope.
By stadia measurement,
Angle 3° + 4.00 ft. double=800 ft. × .9973=797.84 ft. + C.=1.15 ft.=798.99 ft.=12.10 chs.
12.10 Stadia point.
Angle 4° + Rod 7.95 ft. double=15.90 ft. × .9951=1582.21 ft. + C.=1.15 ft.=1583.36 ft.=23.99 chs. + 12.10 chs.=36.09 chs.
36.09 Stadia point,
Angle 0° Rod 5.00 ft. double=1000 ft. + C.=1.15 ft.=1001.15 ft.=15.17 chs. + 36.09 chs.=51.26 chs.

Altitude	Chs.	
	51.26	Stadia point. Angle 16 + Rod 7.30 ft. double = 1460 ft. × .9240 = 1349.04 ft. + C = 1.10 ft. = 1350.14 ft. = 20.45 chs. + 51.26 chs. = 71.71 chs.
	70.00	Foot of rim rock wall about 200 ft. high, bears N. E. and S. W.; ascend.
[fol. 307]	71.30	Top of wall of westerly edge of high mesa; the north end of the Raton plateau, bears N. E. and S. W. Leave brush, bears N. E. and S. W.
6950 ft.	71.71	Stadia point, thence by tape measurement. Across mesa.
6950 ft.	80.00	N. 92 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 285th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 285 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high, around the post. Pits impracticable. Volcanic cone at Watervale bears N. 59° 20′ W. North face of N. E. salient of Raton plateau bears N. 76° 38′ W. This cor. stands on the mesa. Land, montainous. Soil, rocky, sand and clay, 3rd rate. Vegetation, grass on mesa; dense oak and aspen brush on slope. Alt. 6950 ft. Temp. 60°.

286th Mile

S. 89° 53′ E. on the tangent to the parallel
Across high mesa.

	56.00	Dry ravine about 100 ft. deep, course N. Drops over wall about 15.00 chs. N. Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point, By 1st set 80.02 chs., By 2nd set 79.98 chs.; the mean of which is 80.00 chs.
6900 ft.	80.00	N. 110 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 286th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 286 M. stamped in the center. Dug pits

[fol. 308]

Altitude	Chs.	
		36x36x18 ins. N., S., E. and W. of the cor. 6 ft. dist.
		Raised a mound of earth, 5 ft. base 2 ft. high around the post.
		Land, high plateau.
		Soil, sandy, 3rd rate.
		Vegetation, grass.
		Alt. 6900 ft.
		Temp. 62°.

287th Mile

		S. 89° 52′ E. on the tangent to the parallel.
6900 ft.	15.30	East edge of mesa, bears N. E. and S. W.
		Descend, thence by stadia measurement,
		Angle 9°—Rod 6.36 ft. double=1272 ft.×.9755=1240.84 ft.+C.=1.13 ft.=1241.97 ft.=18.82 chs.+15.30=34.12 chs.
	34.12	Stadia point,
		Angle 11°—Rod 6.80 single=680 ft.×.9636=655.25 ft.+C.=1.13 ft.=656.38 ft.=9.94 chs.+34.12 chs.=44.06 chs.
	44.06	Stadia point,
		Angle 5°—Rod 10.10 ft. double=2020 ft.×.9924=2004.65 ft.+C.=1.14 ft.=2005.79 ft.=30.39 chs.+44.06 chs.=74.45 chs.
	74.45	Stadia point, thence by tape measurement,
6700 ft.	80.00	N. 129 lks. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 287th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 287 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A point of rocks on N. side of rocky butte bears S. 65° 25′ E. about ¾ of a mile dist. N. face wall of mesa, bears N. 83° 45′ W. about ¾ of a mile dist.
		Cone-shaped peak bears S. 10° 56′ about 7 miles dist.
[fol. 309]		This cor. stands on S. E. slope West of R. R. track at the foot of Raton mountains.
		Land, mountainous.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass, scattering pinon timber; and oak brush.
		Alt. 6700 ft.
		Temp. 72°.

Altitude	Chs.	288th Mile
		S. 89° 52′ E. on the tangent to the parallel. Descending; leave the Raton Mountains, bears N. W. and S. E.
	4.75	Colorado & Southern R. R. track bears N. E. and S. W.
		Emery Gap station about 2 miles S. W.
6600 ft.	24.00	Dry arroyo, course N. E., ascend.
	50.80	Top of spur, slope N.; descend gradually.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point,
		By 1st set 80.04 chs.,
		By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
6750 ft.	80.00	N. 150 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 288th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S., and 288 M. stamped in the center. Raised a mound of stone. 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		No bearings.
		Land, rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass; sage and scattering oak brush.
		Alt. 6750 ft.
		Temp. 72°.

289th Mile

[fol. 310]		S. 89° 51′ E. on the tangent to the parallel. Descend.
6600 ft.	41.00	Bottom of dry ravine, about 100 ft. deep, course N.
		Ascend.
6675 ft.	51.00	Top of spur, slope S. N. side of round hill; descend.
6650 ft.	60.00	Foot hills, bears N. W. and S. E.
		Thence over nearly level plain.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point,
		By 1st set 80.05 chs.;
		By 2nd set 79.95 chs.; the mean of which is 80.00 chs.
6650 ft.	80.00	N. 172 lks. from the tangent,

Altitude	Chs	
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 289th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 289 M. stamped in the center.
		Dug pits 36x36x18 ins. N., S., E. and W. of cor. 6 ft. dist.
		Raised a mound of earth, 5 ft. base 2 ft. high around the post.
		No bearings.
		Land, rolling and plain.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass, sage and scattering oak brush on rolling land; and grass and soapweed on plain.
		Alt. 6650 ft.
		Temp. 65°.

290th Mile

		S. 89° 50′ E. on the tangent to the parallel.
		Over nearly level land.
	25.25	Darling's 43rd mile cor. bears South 5.18 chs. dist.
		A sandstone 22x8x4 ins. marked C. on N., 43 M. on E., N. M. on S. and 1868 on W. faces.
[fol. 311]		I destroyed this cor. The first one I have been able to find East of his 52nd mile cor.
	30.00	Enter oak brush, bears N. and S.
	54.00	Bottom of Long Canon, about 75 ft. deep.
		Dry bed 20 lks. wide, course S. E.; ascend.
	65.00	On N. wall of canon bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 12 lks., position of middle point,
		By 1st set 80.06 chs.
		By 2nd set 79.94 chs.; the mean of which is 80.00 chs.
6600 ft.	80.00	N. 196 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 290th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 290 M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high around the post. Pits impracticable. A round peak on mesa bears S. 16° W.
		South side of butte E. of R. R. track bears S. 82° W.

Altitude Chs

N. salient of Raton plateau bears N. 85¾ W.
Land, gently rolling, except where broken by canon.
Soil, sandy loam, and rocky, 3rd rate.
Vegetation, grass and oak brush.
Alt. 6600 ft.
Temp. 60°.

May 28th, 1903.

Having previously made a careful examination of the transit and found it in perefect adjustment.
At the point for the 290th mile cor.
At 3h 05m A. M., l.m.t., May 29th, 1903, I observe Polaris at Eastern elongation and mark a point in the line so determined on a plug driven in the ground North of my station.
[61, 312] At 7h 15m A. M. May 29th, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian thus determined on a plug driven in the ground N. of my station.
The magnetic bearing of this meridian is N. 12° 45′ W.
This gives the magnetic variation 12° 45 E.
I now lay off an angle of 90° from this meridian from the North to the East for the tangent to the parallel.
In all these observations and the subsequent turning of angles, the mean of four sights was used with the telescope reversed at each sight.
This line was run through to the 7th astronomical station, at the 325th mile cor., where the falling was found to be 10.52 chs., south of the 37th parallel, as determined by astronomical observations on the nights of Nov. 3rd, 4th and 7th, 1902. This being 5.92 chs. outside the limit of 3″ are allowed by the Hon. Commissioner, the line was corrected from this point, at the rate of 18.4ks. N. per mile to bring it inside of said limit,—hence the difference in date between the projection of the tangents and the establishment of permanent corners.

291st Mile

East on the tangent to the parallel.
Along North wall of Long Canon.
24.44 On wall of canon, bears N. E. and S. W.

Altitude	Chs.	
		Thence by stadia measurement.
		Angle 0° Rod 9.20 double=1840 ft.+C.=1.15 ft.=1841.15 ft.=27.90 chs.+24.44 chs.=52.34 chs.
	38.50	Bottom of Long Canon about 150 ft. deep, course NE.
	52.34	Stadia point on south wall, bears N. E. and S. W.
[fol. 313]		Thence by tape measurement
	61.00	Enter timber and brush, bears N. and S.
		Difference between measurements of 52.10 chs. by 2 sets of chainmen is 6 lks., position of middle point,
		By 1st set 52.13 chs.,
		By 2nd set 52.07 chs.; the mean of which is 52.10 chs.+27.90 chs., stadia=80.00 chs.
6700 ft.	80.00	N. .76 of a link + Correction 18 lks. N. = 18.76 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 291st mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N.M. on S. and 291 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Pits impracticable.
		A pinon tree 6 ins. dia. bears N. 8½° E. 100 lks. dist. marked Colo., 291 M., B.T.
		A pine tree 18 ins. dia. bears S. 29° E. 150 lks. dist. marked N.M., 291 M., B.T.
		A cedar tree 10 ins. dia. bears S. 43° 30′ W. 124 lks. dist. marked N.M., 291 M., B.T.
		A pinon tree 7 ins. dia. bears N 48½° W. 54 lks. dist. marked Colo., 291 M., B.T.
		This cor. stands on NW. side of rocky ravine, about 30 ft. deep, course NE.
		Alt. 6700 ft.
		Temp. 62°.

292nd Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Descend.
	3.30	Bottom of dry, rocky ravine, course N. E.
	10.00	Leave timber, bears N. and S.
	27.20	On south wall of canon, bears N. W. and S. E.
		Thence by stadia measurement.
		Angle 2°—Rod 11.50 ft. double=23.00 ft.× .9988=2297.24 ft.+C.=1.15 ft.=2298.39 ft.= 34.82 chs.+27.20 chs.=62.02 chs.
6000 ft.	45.00	Bottom of Long Canon, course S. E.

Altitude	Chs.	
	62.02	Stadia point on N. wall on canon, bears N. W. and N. E.
[fol. 314]		Angle 5°—Rod 11.00 double = 2200 ft. × .9924 = 2183.28 ft. + C. = 1.14 ft. = 2184.42 ft. = 33.20 chs. + 62.02 chs. = 95.22 chs.— 80.00 chs. = 15.22 chs. on 293rd mile.
	80.00	Comes on rocky slope of canon wall.
		I advance this cor.
		Land, rough and broken, by deep canon.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, pine and pinon timber.
		Oak, aspen and pinon brush.

293rd Mile

		S. 89° 59' E. on the tangent to the parallel.
	15.22	Stadia point, thence by tape measurement.
6300 ft.	16.00	N. 4 lks. + Correction 36 lks. N. = 40 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 292nd mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., S. M. on S. and 292.2 M. stamped in the center.
		Raised a mound of stone 5 ft. base, 2 ft. high around the post.
		Pits impracticable.
		This cor. on rocky S. E. slope in canon, about 100 ft. above bottom.
		No bearing trees.
		Alt. 6300 ft.
		Temp. 70°.
	23.00	Darling's 40th mile cor. bears S. about 5 chs. dist.
		A sandstone 18x10x7 ins. in stone mound, marked C. on N., 40 M. on E., N. M. on S. 1868 on W.
		I destroyed this cor.
	26.10	Stadia measurement from this point.
		Angle 7° + Rod 9.40 ft. double = 1880 ft. × .9851 = 1851.99 ft. + C. = 1.14 ft. = 1853.13 ft. = 28.07 chs. + 26.10 chs. = 54.17 chs.
	47.00	Bottom Long Canon, where it is joined by canon
[fol. 315]		from S. W.; course N. E.
	54.00	On wall of canon above 300 ft. above bottom, bears N. and S. Enter pinon timber, bears N. and S.
	54.17	Stadia point, thence by tape measurement.

Altitude	Chs.	
	61.10	Leave timber, bears N. and S. Difference between measurements of 35.93 chs. by 2 sets of chainmen is 2 lks., position of middle point. By 1st set 35.94 chs., By 2nd set 35.92 chs.; the mean of which is 35.93 chs. + 28.07 chs., stadia = 64.00 chs. from last cor. + 16.00 chs. = 80.00 chs.
6300 ft.	80.00	N. 7 lks. + Correction 54 lks. N. = 61 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 293rd mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 293 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable. No trees within limit. Land, rough and broken. Soil, rocky and sandy, 3rd rate. Vegetation, pinon timber; oak and pinion brush.

294th Mile

		S. 89° 58' E. on the tangent to the parallel.
	15.00	Bottom dry ravine about 100 ft. deep, course N.
6300 ft.	38.50	On south wall of Long Canon, bears N. W. and S. E. Thence by stadia. Angle 10°—Rod 7.40 double = 1480 ft. × .9698 = 1433.35 ft. + C. = 1.13 ft. = 1436.43 ft. = 21.76 chs. + 38.50 chs. = 60.26 chs.
	60.26	Stadia point, thence by tape measurement.
[fol. 316]	75.00	Bottom of Long Canon, in creek bed, water in holes in bend, from N. W. to N. E. Difference between measurements of 58.24 chs. by 2 sets of chainmen is 6 lks., position of middle point. By 1st set 58.27 chs., By 2nd set 58.21 chs.; the mean of which is 58.24 chs. + 21.76 chs., stadia = 80.00 chs.
6300 ft.	80.00	N. 12 lks. + Correction 72 lks. N. = 84 lks. N. from the tangent. This point for cor. comes in bed of creek, impracticable to establish at that point. I therefore, set it South 115 lks. from its true place.

Altitude	Chs.	
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for witness cor. for 294th mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and W. C. 294 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A cottonwood tree 10 ins. dia. bears S. 83½° E. 382 lks. dist., marked N. M., W. C. 294 M., B. T.
		A cottonwood tree 6 ins. dia. bears N. 64° W. 225 lks. dist. marked Colo., W. C. 294 M., B. T.
		No other trees suitable for bearing trees.
		This witness cor. stands in canon on S. bank of the creek.
		Land, rough and broken.
		Soil, rocky, sandy loam, 3rd rate.
		Vegetation, scrub cedar and pinion and cottonwood timber; oak, willow and soft maple brush.
		Alt. 6000 ft.
		Temp. 75°.

295th Mile

		S. 89° 57′ E. on the tangent to the parallel.
[fol. 317]	3.90	Creek in Long Canon, water in holes, course S. E.
	18.00	Same creek, dry bed 20 lks. wide, course N. E.
	38.00	Cabin about 2 chs. S.
5900 ft.	40.00	Same creek, water in holes, course S. E.
6050 ft.	65.00	On rocky spur, slope S. about 150 ft. above creek bottom.
		Descend.
	75.00	Foot of hill bears N. E. and S. W.; leave timber and brush.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point.
		By 1st set 80.05 chs.
		By 2nd set 79.95 chs.; the mean of which is 80.00 chs.
5900 ft.	80.00	N. 19 lks. + Correction 90 lks. N. = 109 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 295th mile cor.

Altitude	Chs.	
		A brass cap on the top of the pipe has raised letters, Cole, on N., N. M. on S. and 295 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., E., S. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base, 2 ft. high around the post.
		This cor. on flat north of creek.
		No bearing trees.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, pinon and aspen timber. Aspen, oak and willow brush.
		Alt. 5900 ft.
		Temp. 75°.

296th Mile

		S. 89° 57' E. on the tangent to the parallel.
	21.15	On low spur, slope S.
		Stadia measurement from this point.
[fol. 318]		Angle 15° — Rod 6.50 double = 1.300 ft. × 9330 = 12132.90 ft. + C. = 1.11 ft. 12134.01 ft. = 18.39 chs. + 21.15 chs. = 39.54 chs.
	21.80	Darling's 376th mile cor., bears S. 1.94 chs. dist. A sandstone 18 x 10 x 8 ins. in stone mound. I destroyed this cor. The first one I have been able to find since passing his 40th mile.
5800 ft.	26.00	Bottom of rocky canon, comes from N. E. Ascend steep over rocks and brush.
	38.50	Foot of wall about 75 ft. high, bears N. E. and S. W.
	39.54	Top of wall, bears N. E. and S. W. Stadia point, thence by tape measurement; ascend.
6250 ft.	49.00	Top of mesa bears N. and S.; enter scattering timber and brush, bears N. and S.
		Difference between measurements of 61.61 chs. by 2 sets of chainmen is 4 lks., position of middle point.
		By 1st set 61.63 chs.
		By 2nd set 61.59 chs.; the mean of which is 61.61 chs. + 18.39 chs., stadia = 80.00 chs.
6200 ft.	80.00	N. 27 lks. + Correction 108 s. N. = 135 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 296th mile cor.

Altitude	Chs.	
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 296 M. stamped in the center. Raised a mound of stone 5 ft. base 2 ft. high around the post. Lone tree on N. end of long butte bears N. 80° 28′ E.
		~~E. face of wall across canon bears S. 2° 23′ E.~~
		This cor. stands on high mesa at head of little gulch, course S.
		Land, rolling and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass; scattering pinon and cedar timber; oak and pinon brush.
[fol. 319]		Alt. 6200 ft.
		Temp. 76°.

297th Mile

S. 89° 56′ E. on the tangent to the parallel.
Over gently rolling table or mesa land.

	24.00	Parling's 36th mile cor., bears S. 1 ch. dist. A sandstone 16 x 8 x 6 ins. marked C. on N. 36 M. on E., N. M. on S., and 1868 on W. faces. I destroyed this cor.
	26.00	Leave oak brush, bears N. and S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 80.01 chs.,
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
6150 ft.	80.00	N. 37 lks. + Correction 126 lks. N. = 163 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 297th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 297 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., E., S. and W. of cor. 6 ft. dist. Raised a mound of earth 5 ft. base 2 ft. high around the post.
		A round peak on mesa bears S. 48° W. about 10 chs. dist.
		A timbered cone on high ridge bears N. 52° E. about 6 miles dist.
		Land, gently rolling mesa.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and soapweed.
		Patches of oak brush on W. end of mile.
		Alt. 6150 ft.
		Temp. 75°.

Altitude	Chs.	
		298th Mile
		S. 89° 55′ E., on the tangent to the parallel.
		Over nearly level mesa.
	24.30	Darling's 35th mile cor., 70 lks. S.
		I destroyed this cor.
[fol. 320]		
	59.85	Wagon road bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is nothing; the mean is 80.00 chs.
6150 ft.	80.00	N. 49 lks. + Correction 144 lks., N. = 193 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 298th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 298 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		Top of round peak on mesa bears S. 51° W. about 30 miles dist.
		North salient of Raton plateau bears N. 88° W.
		Land, mesa.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass.
		Alt. 6150 ft.
		Temp. 70°.
		299th Mile
		S. 89° 55′ E. on the tangent to the parallel.
	9.10	On low spur, slope S., thence by stadia measurement.
		Angle 7° + Rod 7.20 ft. double = 1440 ft. × .9851 = 1418.54 ft. + C. = 1.14 ft. = 1419.68 ft. = 21.51 chs. + 9.10 chs. = 30.61 chs.
	24.30	Darling's 34th mile cor. on this line. I destroyed this cor.
	26.50	Foot of lava wall bears N. and S.
6350 ft.	30.61	Stadia point on top of wall 100 ft. high, bears N. and S.
		Top of high butte that extends N. about ½ mile and S. about 15 chs. (Hardesty Butte.)
6350 ft.	38.08	On top of wall bears N. and S.; east side top of long butte.
		Thence by stadia measurement; descend.
[fol. 321]		Angle 11° — Rod 6.65 ft. double = 1330 × .9636 = 1281.59 ft. + C. = 1.13 ft. = 1282.72 ft. = 19.43 chs. + 38.08 chs. = 57.51 chs.
	57.51	Stadia point,

Altitude	Chs.	
		Angle 9° — Rod 7.90 ft. single = 790 ft. × .9755 = 682.85 ft. + C. = 1.13 ft. = 683.98 ft. = 10.36 chs. + 57.51 chs. = 67.87 chs.
	64.00	Dry gulch, course N. E.
	64.50	Graded wagon road, bears N. E. and S. W.
	67.87	Stadia point, on spur, slope N. E.
		Angle 9° — Rod 10.70 ft. double = 2140 ft. × .9755 = 2087.57 ft. + C. = 1.13 ft. = 2088.70 ft. = 31.64 chs. + 67.87 chs. = 99.51 chs. — 80.00 chs. = 19.51 chs. on 300th mile.
	80.00	Comes on rocky and brushy E. slope.
		I advance this cor.
		Land, rough and mountainous, broken by lava cliffs.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scattering cedar and pinon timber. Pinon and oak brush.

300th Mile.

		S. 89° 54′ E. on the tangent to the parallel.
	19.51	Stadia point, thence by tape.
5500 ft.	20.00	N. 65 lks. + Correction 166 lks. N. = 231 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 299th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 299.25 M. stamped in the center. Raised a mound of stone 5 ft. base, 2 ft. high around the post. Pits impracticable.
		A pinon tree 10 ins. dia. bears S. 4° 20′ E. 132 lks. dist. marked N. M., 299.25 M., B. T.
		A pinon tree 12 ins. dia. bears S. 70½° E. 395 lks. dist. marked N. M., 299.25 M., B. T.
		George Hardesty's windmill in front of his house bears N. 35° E. about 20 chs. dist.
[fol. 322]		This cor. stands on N. slope near foot of hill.

April 22nd, 1903.

		I examine the transit and compare the steel tapes with the standard, find the instrument in adjustment and tapes of correct length.
	24.00	Darling's 33rd mile cor. 1 ch. N. of tangent, a X mark on a rock and a stone monument beside it.
		I destroyed this cor.

Altitude	Chs.	
5450 ft.	27.00	Foot of hills; leave timber, bears S. and N. about 3 chs. then N. W., thence across little valley.
	28.50	Deserted cabin about 3 chs. S.
	31.30	Dry bed of water course, 30 lks. wide, course S.
	33.25	Wagon road bears N. and S.
5450 ft.	60.00	Foot of hills bears N. E. and S. W.; leave valley, enter brush, ascend.
		Difference between measurements of 60.00 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 60.01 chs.
		By 2nd set 59.99 chs.; the mean of which is 60.00 chs., from last cor. + 20.00 chs. = 80.00 chs.
5806 ft.	80.00	N. 76 lks. + Correction 180 lks. N. = 256 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 300th mile cor.
		A brass cap on the top of the pipe has raised letters, Cole, on N., N. M. on S. and 300 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high around the post. No bearings.
		This cor. stands on steep rocky N. W. slope.
		Land, valley and rough hills.
		Soil, sandy loam, 2nd and 3rd-rate.
		Vegetation, grass and oak and pinon timber and brush.
[fol. 323]		Alt. 5800 ft.
		Temp. 72°

301st Mile

S. 89° 53' E. on the tangent of the parallel.

	19.00	Bottom of rocky gulch, course N. E.
6100 ft.	23.0	On mesa bears N. E. and S. W.; enter timber and brush, bears N. E. and N. W.
	24.50	Darling's 32nd mile cor. about 2 chs. N. I destroy this cor.
	36.90	Darling's astronomical monument No. 1, 2.10 chs. north of the tangent. Sandstone shaft firmly set 11 x 14 ins. 4 ft. above ground marked Colorado on N. 1868 on E., New Mexico on S. and 37° N. L. on W. faces.
		I destroy this monument.
	42.30	Wire fence bears N. and S. about 1 ch. N. to fence cor., thence fence runs east.

Altitude	Chs.	
	78.00	Bottom of box canon about 150 ft. deep, course S.
	80.00	Comes on slope of canon wall.
		I advance this cor.
		Land, rolling mesa, and broken by canons.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, pine and pinon timber, oak and pinon brush.

302nd Mile

S. 89° 53' E. on the tangent to the parallel, ascend.
Difference between measurements of 88.00 chs. by 2 sets of chainmen is 10 lks., position of middle point,
By 1st set 88.05 chs.,
By 2nd set 87.95 chs.; the mean of which is 88.00 chs. — 80.00 chs. = 8.00 chs. on 302nd mile.

6600 ft.	8.00	N. 94 lks. + Correction 200 lks. N. = 294 lks. N. from the tangent,
		Set an iron pipe 3 ins. dia. 4 ft. long with flange
[fol. 324]		at the bottom 2 ft. in the ground for 301st mile cor.
		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 301.1 M. stamped in the center.
		Raised a mound of stone 5 ft. base 2 ft. high around the post.
		Pits impracticable.
		A pinon tree 6 ins. dia. bears S. 41° W. 293 lks. dist. marked N. M., 301.1 M., B. T.
		A pinon tree 12 ins. dia. bears N. 54° 40' W. 364 lks. dist., marked Colo., 301.1 M., B. T.
		No other trees within limit.
		Leave timber and brush bears N. and S.
		Alt. 6000 ft.
		Temp. 80°.
	24.50	Darling's 31st mile cor. about 2 chs. N.
		I destroy this cor.
	27.00	Top of ridge bears N. E. and S. W.
		Difference between measurements of 72.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 72.02 chs.,
		By 2nd set 71.98 chs.; the mean of which is 72.00 chs., from last cor. + 8.00 chs. = 80.00 chs.
6050 ft.	80.00	N. 110 lks. + Correction 216 lks. N. = 326 lks. N. from the tangent,

Altitude	Chs.	
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 302nd mile cor.
		A brass cap on the top of the pipe has raised letters, Cole on N., N. M. on S. and 302 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of cor. 67 ft. dist.
		Raised a mound of earth 3 ft. base, 2 ft. high around the post.
		A conical butte on high mesa bears N. 60° 11′ W.
		N. end of Hardesty butte bears N. 83° 58′ W.
		Land, rolling.
[fol. 327]		Soil, sandy loam, 3rd rate.
		Vegetation, grass; scattering pinon timber; oak and pinon brush.
		Alt. 6000 ft.
		Temp. 80°.

303rd Mile

		S. 89° 52′ E. on the tangent to the parallel.
	24.50	Darling's 302nd mile cor. about 2 chs. N.
		I destroyed this cor.
6100 ft.	34.00	Top of ridge, bears N. E. and S. W.
	64.00	Thence by stadia measurement; enter brush and scattering timber, bears N. and S.
		Angle 8° — Rod 9.20 ft. double = 1840 ft. × .9806 = 1804.30 ft. + C. = 1.14 ft. = 1805.44 ft. = 27.35 chs. + 64.00 chs. = 91.35 chs. — 80.00 chs. = 11.35 chs. on 304th mile.
	71.00	Bottom of dry canon, 300 ft. deep, course N. E.
	80.00	Comes in rocky and brushy hillside.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass; cedar and pinon timber.
		Oak brush.

304th Mile

		S. 89° 52′ E. on the tangent to the parallel.
	11.35	Stadia point, thence by tape measurement.
		Difference between measurements of 64.65 chs. by 2 sets of chainmen 8 lks., position of middle point.
		By 1st set 64.69 chs.,
		By 2nd set 64.61 chs.; the mean of which is 64.65 chs. = 12.00 chs. on 304th mile.

Altitude	Chs.	
5800 ft.	12.00	N. 132 lks. + Correction 237 lks. N. = 369 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 305rd mile cor.
[fol. 326]		A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S. and 303.15 M. stamped in the center.
		Raised a mound of stone 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		Alt. 5809 ft.
		Temp. 80°.
	13.00	Bottom of dry canon, course N. E.
		Ascend.
	17.00	Top of rocky spur, slope S.; descend.
	22.00	Bottom of main canon, course N.; ascend.
6000 ft.	48.60	On E. wall of canon, bears N. W. and S. E.
	64.40	Top of ridge, bears N. and S.
		Thence by stadia.
		Angle 2° — Rod 12.55 ft. double = 2510 ft. × .9988 = 2506.99 ft. + C. = 1.15 ft. = 2508.14 ft. = 38.00 chs. + 64.40 chs. = 102.40 chs. — 80.00 chs. = 22.40 chs. on 305th mile.
	80.00	Comes in rocky canon 250 ft. deep, course N. W. I advance this cor.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scattering pinon timber: oak and pinon brush.

305th Mile

		S. 89° 51′ E. on the tangent to the parallel
	22.40	On N. wall of canon, bears N. W. and S. E.
		Stadia point, thence by tape measurement.
		Difference between measurements of 54.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 54.02 chs.,
		By 2nd set 53.98 chs.; the mean of which is 54.00 chs. + 38.00 chs., stadia = 92.00 chs. from last cor. + 12.00 chs. = 104.00 chs. — 80.00 chs. = 24.00 chs. on 305th mile cor.
5900 ft.	24.00	N. 157 lks. + Correction 257 lks. N. = 414 lks. N. from the tangent.
[fol. 327]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 304th mile cor.

Altitude	Chs	
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 304.3 M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		A cedar tree 10 ins. dia. bears N. 42½° W. 120 lks. dist., marked Colo., 304.3 M., B. T.
		No other trees within limit.
	24.50	Darling's 28th mile cor. about 3 chs. N. from the tangent.
		Difference between measurement of 56.00 chs. by 2 sets of chainmen is 6 lks., position of middle point.
		By 1st set 56.03 chs.,
		By 2nd set 55.97 chs., the mean of which is 56.00 chs., from the last cor. + 24.00 chs. = 80.00 chs.
6000 ft.	80.00	N. 172 lks. + Correction 270 lks. N. = 442 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 305th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 805 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high, around the post. Pits impracticable.
		North end of Hardesty butte bears N. 87¼° W.
		Black Peak bears S. 76½° W.
		Land, rolling and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass; oak brush; and scattering pinon timber.
		Alt. 6000 ft.
		Temp. 79°.

306th Mile

		S. 89° 50′ E. on the tangent to the parallel.
6050 ft. [fol. 328]	12.00	Top of high ridge bears N. E. and S. W.; descend.
	27.09	Top of rocky bluff, bears N. E. and S. E., overlooking Cimarron Valley.
		Thence by stadia measurement.
		Descend.
		Angle 6° — Rod 12.65 double = 2530 ft. × .9891 = 2502.42 ft. + C = 1.14 ft. = 2503.56 ft. = 37.93 chs. + 27.09 chs. = 65.02 chs.

Altitude	Chs.	
	65.02	Stadia point. Angle 2°—Rod 11.20 ft. double=22.40 ft. × .9988=22.37.31 ft. + C=1.15 ft.=22.38.46 ft.
		=33.91 chs. × 65.02 chs.=98.93 chs.—80.00 chs.=18.93 chs. on 307th mile.
	80.00	Comes on rough, rocky and brushy S. E. slope. I advance this cor. Land, rough and broken. Soil, sandy and rocky, 3rd rate. Vegetation, scattering pinon timber; oak and pinon brush.

307th Mile

S. 89° 50′ E. on the tangent to the parallel. Descending.

	18.93	Stadia point, thence by tape measurement,
5600 ft.	20.00	N. 202 lks. + Correction 292 lks. N.=494 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 306th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N. N. M. on S. and 306.25 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high, around the post. Pits impracticable.
	42.35	Foot of bluff, enter Cimarron valley, bears N. E. and S. W. Leave brush, bears N. E. and S. W.
[fol. 329]		Difference between measurements of 60.00 chs. by 2 sets of chainmen is 2 lks., position of middle point, By 1st set 60.01 chs., By 2nd set 59.99 chs., the mean of which is 60.00 chs. from last cor. + 20.00 chs.=80.00 chs.
5400 ft.	80.00	N. 221 lks. + Correction 306 lks. N.=527 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 307th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S., and 307 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. from the cor. 6 ft. dist. Raised a mound of earth 5 ft. base, 2 ft. high around the post.

Altitude	Chs.	
		A monument of gray, cone-shaped peak in edge of valley bears N. 82° W. about ½ mile dist.
		Point of lava rock on top of sandstone cliff bears N. 38° 30′ W. about 1 mile dist.
		Land, rough slope and valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and soapweed in valley; oak and pinon brush on slope.
		Alt. 5400 ft.
		Temp. 80°.

308th Mile

		S. 89° 49′ E. on the tangent to the parallel. Over gently rolling valley land.
	17.00	Cabin about 3 chs. S.
	64.15	Dry bed of Covert Canon Creek, 80 lks. wide, water in holes, course S.
		Difference between measurements of 80.99 chs. by 2 sets of chainmen is nothing, the mean is 80.00 chs.
5300 ft.	80.00	N. 247 lks. + Correction 324 lks. N.=571 lks. N. from the tangent,
[fol. 330]		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for 308th mile cor.—
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 308 M. stamped in the center.
		Dug pits 36 x 36 x 18 ins. S., N., E. and W. from this cor. 6 ft. dist.
		Raised a mound of earth 5 ft. base, 2 ft. high around the post.
		Monument on round, red butte in valley bears N. 5° 2′ E.
		S. salient of N. bluff bears N. 75° 52′ E.
		Monument on gray cone in valley bears N. 53° 33′ W.
		This cor. stands under E. and W. wire fence that is supposed to be on the Darling line, though I have not been able to find corners along this part of the valley bearing the Darling marks.
		Land, gently rolling.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus.
		Alt. 5300 ft.
		Temp. 76°.

Altitude Chs.

June 23rd, 1903

I examine the transit and compare the steel tapes with the standard, find all correct and in adjustment.

309th Mile

S. 89° 48′ E. on the tangent to the parallel. Over gently rolling land.

78.50 Dry gulch, course S. E.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,

By 1st set 80.01 chs.,

By 2nd set 79.99 chs., the mean of which is 80.00 chs.

5275 ft. 80.00 N. 275 lks. + Correction 342 lks. N.=617 lks. N. from the tangent,

[fol. 331] Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 309th mile cor.

A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S., and 309 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high around the post.

Pits impracticable.

A cedar tree 14 ins. dia bears S. 6° 20′ W. 705 lks. dist. marked N. M., 309 M., B. T.

A cedar tree 14 ins. dia. bears S. 29° W. [illegible] lks. dist. marked N. M., 309 M., B. T.

Land, gently rolling.

Soil, sandy loam, 3rd rate.

Vegetation, grass and cactus.

Alt. 5275 ft.

Temp. 70°.

Having previously examined the transit and found it to be in perfect adjustment,

At the point for the 309th mile cor.

On June 2nd, 1903, at 2h 49m A. M., l. m. t., I observe Polaris at Eastern elongation, and mark a point in the line so determined on a plug driven in the ground N. of my station. At 6h 30m A. M., June 2nd, 1903, I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a plug driven in the ground N. of my station. The magnetic bearing of this meridian is N. 12° 40′ W.

Altitude Chs.

This gives magnetic variation 12° 40′ E.
I now lay off an angle of 90° from this meridian from the N. to the E. for the tangent to the parallel.
In all these observations and the subsequent turning of angles, the mean of four sights was used, with the telescope reversed at each sight.

310th Mile

East on the tangent to the parallel.
[fol. 332] Over rolling land, along North edge of Cimarron Valley.
Difference between measurments of 80.00 chs. by 2 sets of chainmen is 4 lks.; position of middle point,
By 1st set 80.02 chs.
By 2nd set 79.98 chs.; the mean of which is 80.00 chs.
5300 ft. 80.00 N. .76 of a link + Correction 360 lks. N. = 360.76 lks. N. from the tangent.
Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 310th mile cor.
A brass cap on the top of the pipe has raised letters, Colo. on N., N. M., on S. and 310 M. stamped in the center.
Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
Pits impracticable.
A cedar tree 12 ins. dia. bears S. 46° W. 530 lks. dist., marked N. M., 310 M., B. T.
No other trees within limit.
Land, rolling.
Soil, sandy and rocky, 3rd rate.
Vegetation, scattering pinon, grass and cactus.
Alt. 5300 ft.
Temp. 72.

311th Mile

S. 89° 59′ E. on the tangent to the parallel.
Over rolling land, at foot of bluffs.
Difference between measurements of 80.00 chs. by 2 sets of chainmen is 6 lks., position of middle point,
By 1st set 80.03 chs.

Altitude	Chs	
		By 2nd set 79.97 chs.; the mean of which is 80.00 chs.
5200 ft.	80.00	N. 3 lks. + Correction 378 lks. N. = 381 lks. N. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 311th mile cor.

[fol. 333]

A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 311 M. stamped in the center.

Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.

Pits impracticable.

A cedar tree 16 ins. dia. bears N. 31½° E. 227 lks. dist. marked Colo., 311 M., B. T.

A cedar tree 12 ins. dia. bears S. 70° E. 190 lks. dist. marked N. M., 311 M., B. T.

No other trees within limit.

Land, rolling.

Soil, sandy and rocky, 3rd rate.

Vegetation, grass; cactus and scattering pinon timber and brush.

Alt. 5200 ft.

Temp. 74°.

312th Mile

S. 89° 59' E. on the tangent to the parallel.

Over rolling land, at foot of bluffs N. side of Cimarron Valley.

Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,

By 1st set 80.02 chs.,

By 2nd set 79.98 chs.; the mean of which is 80.00 chs.

5150 ft.	80.00	N. 7 lks. + Correction 396 lks. N. = 403 lks. N. from the tangent.

Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 2 ft. in the ground for the 312th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., N. M. on S., and 312 M. stamped in the center.

Raised a mound of stone, 5 ft. base 2 ft. high, around the post.

Pits impracticable.

Land, rolling.

[fol. 334]

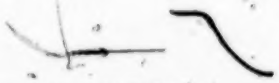
Soil, sandy and rocky, 3rd rate.

Altitude	Chs.	
		Vegetation, grass; cactu and scattering pinon timber and brush.
		Alt. 5150 ft.
		Temp. 78.

313th Mile

		S. 89° 58′ E. on the tangent to the parallel.
		Stadia measurement.
		Angle 6° Rod 8.90 double = 1780 ft. × .9891 = 1760.60 ft. + C. = 1.14 ft. = 1761.74 ft. = 26.69 chs.
5150 ft.	18.75	Foot of bluffs bears N. W. and S. E.; leave Cimarron Valley, ascend over broken rock.
	26.69	On spur, slope S.
		Stadia point.
		Angle 5° + Rod 8.80 ft. double = 1760 ft. × .9924 = 1746.62 ft. + C. = 1.14 ft. = 1747.76 ft. = 26.48 chs. + 26.69 chs. = 53.17 chs.
	40.00	James McCash's house, about 50 chs. S. on river bottom.
		Orchard and alfalfa field.
	53.17	Stadia point, on spur, slope S. E.
		Angle 11° + Rod 9.20 ft. double = 1840 ft. × .9636 = 1773.02 ft. + C. = 1.13 ft. = 1774.15 ft. = 26.88 chs. + 53.17 chs. = 80.05 chs.—.05 chs. = 80.00 chs.
	68.00	Bottom of rocky gulch, course S. E.
	77.00	Foot of lava wall about 200 ft. high, bears N. W. and S. E.
	79.44	On top of lava wall about 700 ft. above the valley, bears N. W. and S. E.
5850 ft.	80.00	N. 12 lks. + Correction 414 lks N. = 426 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 313th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 313 M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
[fol. 335]		Pits impracticable.
		A volcanic peak bears S. 62° 15′ W. about 30 miles dist.
		A gray cone of sandstone bears S. 19° 45′ E. about 3 miles dist.
		This cor. stands on top of high bluff.
		Land, rough and broken.

Altitude	Chs.	
		Soil; sandy and rocky, 4th rate. Vegetation, scattering oak and pinon brush. Alt. 5850 ft. Temp. 80°.



314th Mile

		S. 89° 57′ E. on the tangent to the parallel. Across mesa.
	23.54	Darling's 19th mile bears North 5.86 chs. The first cor. bearing the Darling marks I have found East of his 28th mile cor. I destroyed this cor.
	30.12	On E. wall of mesa, bears N. W. and S. E. Thence by stadia measurement, Angle 12° — Rod 9.65 ft. double — 1930 ft. × .9568 = 1846.62 ft. + C. = 1.12 ft. = 1847.74 ft. = 27.99 chs. + 30.12 chs. = 58.11 chs.
	58.11	Stadia point, Angle 5° — Rod 9.44 single = 944 ft. × .9924 = 936.83 + C. = 1.14 ft. = 937.97 ft. = 14.21 chs. + 68.11 chs. = 72.32 chs.
	72.32	Stadia point, thence by tape measurement.
5330 ft.	78.00	Dry bed of stream, bottom of Jesus Canon, 50 lks. wide, course S. E.; ascend.
5350 ft.	80.00	N. 19 lks. + Correction 432 lks. N. = 451 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground, for the 314th mile cor. A brass cap on the top of the pipe has raised letters: Colo. on N., N. M. on S. and 314 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high around the post. This cor. on West edge of rocky gulch, that comes from N. E.
[fol. 336]		Land, rough and broken. Soil, sandy and rocky, 3d rate. Vegetation, scattering pinon timber; oak and aspen brush. Alt. 5350 ft. Temp. 80°.

315th Mile

		S. 89° 57′ E. on the tangent to the parallel. Stadia measurement, Angle 13° + Rod 9.00 ft. double = 1800 ft. × .9491 + 1708.92 ft. + C. = 1.12 ft. = 1710.04 ft. = 25.91 chs.

Altitude	Chs.	
	.20	Bottom of rocky gulch, course S. W.; astend.
5830 ft.	25.91	Stadia point on wall of canon, bears N. W. and S. E. about 500 ft. above bottom of canon.
		Enter scattering cedar and pinon timber, bears N. W. and S. E.
		Thence by tape measurement.
	80.00	Comes in head of rocky canon, course S.
		I advance this cor.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, scattering cedar and pinon timber; oak, pinon and cedar brush.

316th Mile

S. 89° 56′ on the tangent to the parallel.
Difference between measurements of 62.09 chs. by 2 sets of chainmen is 6 lks., position of middle point.
By 1st set 62.12 chs.,
By 2nd set 62.06 chs.; the mean of which is 62.09 chs. + 25.91 chs., stadia = 88.00 chs. — 80.00 chs. = 8.00 chs. on 316 mile.

5800 ft.	8.00	N. 28 lks. + Correction 452 lks. N. = 480 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 315th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 315.1 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high around the post.
[fol. 337]		Pits impracticable.
		A pinon tree 7 ins. dia. bears N. 59° 30′ W. 68 lks. dist. marked Colo., 315.1 M., B. T.
		A pinon tree 5 ins. dia. bears S. 1° W. 86 lks. dist., marked N. M., 315.1 M., B. T.
		No other trees within limit.
		Alt. 5800 ft.
		Temp. 75°.
5800 ft.	21.91	On wall of canon, bears N. W. and S. E.
		Thence by stadia.
		Angle 18° — Rod 7.90 double = 1580 ft. × .9045 = 1429.11 ft. + C. = 1.09 ft. = 1430.20 ft. = 21.67 chs. + 21.91 chs. = 43.58 chs.
	23.00	Foot of wall about 300 ft. high, bears N. W. and S. E.
	43.58	Stadia point,

Altitude	Chs.	
		Angle 2° — Rod 9.75 ft. double = 1950 ft. × .9988 = 1947.66 ft. + C. = 1.15 ft. = 1948.81 ft. = 29.52 chs. + 43.58 chs. = 73.10 chs.
5200 ft.	53.00	Dry bed of stream 30 lks. wide, course S. E. Bottom of Flat-Head Canon about 600 ft. below last cor. ascend.
	73.10	On low spur, slope S. W.; ascend. Angle 20° + Rod 7.45 double = 1490 ft. × .8830 = 1315.67 ft. + C. = 1.08 ft. = 1316.75 = 19.95 chs. + 73.10 chs. = 93.05 chs. — 80.00 chs. = 13.05 chs. on the 317th mile.
	80.00	Comes on rough slope of Canon wall. I advance this cor. Land, rough and broken. Soil, sandy and rocky, 3rd rate. Vegetation, scattering cedar and pinon timber: oak, pinon and cedar brush.

317th Mile

S. 89° 55′ E. on the tangent to the parallel.

	10.00	Foot of wall about 200 ft. high, bears N. E. and S. W.
	13.05	Stadia point on top of canon wall, bears N. E. and S. W.
[fol. 338]		Thence by tape measurement.
5775 ft.	16.00	N. 39 lks. + Correction 172 lks. N. 511 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flange at the bottom on bed rock for 316th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 316.2 M. stamped in the center. Raised a mound of stone 5 ft. base 2½ ft. high around the post. Pits impracticable. This cor. stands in brush. No trees within limit, suitable for bearing trees. Land, rough and broken. Soil, sandy and rocky, 3rd rate. Vegetation, scattering cedar and pinon timber. Oak, cedar and pinon brush. Alt. 5775 ft. Temp. 70°.
5760 ft.	43.00	Brow of bluff, bears N. W. and S. E.; descend Difference between measurements of 64.00 chs by 2 sets of chainmen is 8 lks., position of middle point.

Altitude	Chs.	
		By 1st set 64.04 chs. By 2nd set, 63.96 chs., the mean of which is 64.00 chs., from last cor. + 16.00 chs. = 80.00 chs.
5400 ft.	80.00	N. 49 lks. + Correction 486 lks. N. = 535 lks. N. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 317th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S., and 317 M. stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high, around the post. Pits impracticable. No bearing trees. Land, rough and broken.
[fol. 339]		Soil, rocky and sandy, 3rd rate. Vegetation, oak, cedar and pinon brush. Alt. 5400 ft. Temp. 70°.

318th Mile

		S. 89° 55′ E. on the tangent to the parallel. Ascend.
5600 ft.	30.00	On mesa, bears N. and S.
	36.30	East edge of mesa, bears N. W. and S. W.; descend.
		To [illegible] by stadia measurement. Angle 8° — Rod 9.60 ft. double = 1920 ft. × .9896 = 1940.59 ft. + C. = 1.15 ft. = 1941.74 ft. = 28.96 chs. + 36.30 chs. = 65.26 chs.
	65.26	Stadia point. Angle 8° — Rod 6.20 ft. double = 1240 ft. × .9806 = 1215.94 ft. + C. = 1.14 ft. = 1217.08 ft. = 18.44 chs. + 65.26 chs. = 83.70 chs. — 80.00 chs. = 3.70 chs. on the 319th mile.
	80.00	Comes in dense brush on N. slope. I advance this cor. Land, rough and broken. Soil, rocky and sandy, 3rd rate. Vegetation, oak, cedar and pinon brush; and scattering pinon timber.

Altitude	Chs.	319th Mile
		S. 89° 54' E. on the tangent to the parallel.
	3.70	Stadia point.
		Thence by tape.
5100 ft.	4.00	N. 63 lks. + Correction 505 lks. N. = 568 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 318th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 318.05 M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post. Pits impracticable.
[fol. 340]		A pinon tree 8 ins. dia. bears S. 31¾° E. 94 lks. dist. marked N. M., 318.05 M., B. T.
		A pinon tree 8 ins. dia. bears N. 70° W. 40 lks. dist. marked Colo., 318.05 M., B. T.
		No other trees suitable for bearing trees.
		This cor. stands on spur, slope N. about 75 ft. above bottom of canon.
		Alt. 5190 ft.
		Temp. 70°.
		June 24th, 1903.

I examine the transit and compare the steel tapes with the standard, find all correct and in adjustment.

		Descend.
	22.00	Bottom of Canon, course S. E.
	24.50	Darling's 14th mile cor. bears N. about 6 chs. from the tangent. A sandstone 26x10x8 ins., marked C. on N., 14 M. on E., N. M., on S. and 1868 on W. faces, in mound of stone. I destroyed this cor.
	30.00	Point on spur, slope S. E.
5000 ft.	36.00	Dry bed of stream, 30 lks. wide, course South. Bottom of Miller's Canon.
	49.27	On spur, slope S. Stadia measurement from this point.
		Angle 19° + Rod 8.20 ft. double = 1640 ft. × .8940 = 1466.16 ft. + C. = 1.08 ft. = 1472.25 ft. = 22.23 chs. + 49.27 chs. = 71.50 ft.
	71.50	Stadia point on wall of canon about 600 ft. above bottom of canon, bears N. E. and S. W.

Altitude	Chs.	
		Thence by tape measurement.
		Difference between measurements of 53.77 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 53.78 chs.
		By 2nd set 53.76 chs.; the mean of which is 53.77 chs.+22.23 chs., stadia=76.00 chs. from last cor.+4.00 chs.=80.00 chs.
5500 ft. [fol. 341]	80.00	N. 76 lks.+Correction 522 lks. N.=598 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 319th mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 319 M. stamped in the center. Raised a mound of stone, 5 ft. base 2 ft. high, around the post Pits impracticable.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd. rate.
		Vegetation, scattering cedar and pinon timber; oak, cedar and pinon brush.
		Alt. 5500 ft.
		Temp. 75°.

320th Mile

		S. 89° 53′ E. on the tangent to the parallel.
5500 ft.	9.70	East edge of mesa bears N. W. and S. E.
		Thence by stadia measurement.
		Angle 12°—Rod 13.00 ft. double=2600 ft.×.9568=2487.68 ft.+C.=1.12 ft.=2488.80 ft.=37.71 chs.+9.70 chs.=47.41 chs.
	44.00	Foot of bluff bears N. W. and S. E. Enter Cimarron valley.
	47.41	Stadia point, thence by tape measurement. Difference between measurements of 42.29 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 42.30 chs.
		By 2nd set 42.28 chs.; the mean of which is 42.29 chs.+37.71 chs. stadia=80.00 chs.
4900 ft.	80.00	N. 92 lks.+Correction 540 ft. N.=632 lks. N. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 320th mile cor.

Altitude	Chs.	
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 329 M. stamped in the center. Dug pits 36x36x18 ins. N., E., S. and W. of the cor. 6 ft. dist.,
		[fol. 342] and raised a mound of earth, 5 ft. base, 2 ft. high, around the post.
		Point of cliff bears N. 14° 25' E. about ½ mile dist.
		Top of sandstone butte in valley bears S. 79° E. about 1 mile dist.
		S. E. salient of cliffs bears S. 14° W. about 1 mile dist.
		Land, rough and broken, and valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus in valley; and oak, cedar and pinon brush on slopes.
		Alt. 4900 ft.
		Temp. 82°

321st Mile

		S. 89° 53' E. on the tangent to the parallel. Over gently rolling valley land.
	10.25	Ledge of red sandstone, about 15 ft. high, bears N. E. and S. W.
	27.00	Darling's 12th mile cor., bears N. about 8 chs. dist.
		I destroyed this cor.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 1 lks.; position of middle point.
		By 1st set 80.02 chs..
		By 2nd set 79.98 chs.; the mean of which is 80.00 chs.
4850 ft.	80.00	N. 110 lks. + Correction 558 lks. N.=668 lks. N. from the tangent.
		Set temporary cor.
		See page 410.
		Land, gently rolling, valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus.
		Alt. 4850 ft.
		Temp. 82°

322nd Mile

		S. 89° 52' E. on the tangent to the parallel.
	38.30	Dry arroyo, course S.
	[fol. 343] 58.33	Stadia measurement, from this point.

Altitude	Chs.	
		Angle 11 + Rod 16.65 ft. double = 1610 ft. × 9636 = 1551.40 ft. + C. 1.13 ft. = 1552.53 ft. = 23.52 chs. + 58.33 chs. = 81.85 chs. — 80.00 chs. = 1.85 chs. on the 323rd mile.
4850 ft	60.00	Foot of bluff, bears N. W. and S. E., ascend
	80.00	Comes among big blocks of stone on steep S. W. slope.
		I advance this cor.
		Land, valley and hillside.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus in valley.
		Scattering oak, cedar and pinon brush on slope.

323rd Mile

		S. 89° 52' E. on the tangent to the parallel
	1.85	Stadia point, thence by tape.
		Difference between measurements of 60.48 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 60.49 chs.,
		By 2nd set 60.47 chs., the mean of which is 60.48 chs. + 23.52 chs., stadia = 84.00 chs. — 80.00 chs. = 4.00 chs. on 323rd mile.
5200 ft	4.00	N. 130 lks. + Correction 576 lks. N. = 706 lks. N. from the tangent.
		This offset places the point for this cor. over ridge on N. slope.
		Set temporary cor.
		Alt. 5200 ft.
		Temp. 82°
		Descend.
4800 ft	35.00	Foot of bluff bears N. W. and S. E.; enter Cimarron valley.
		Difference between measurements of 76.00 chs. by 2 sets of chainmen is 8 lks., position of middle point.
		By 1st set 76.04 chs.,
		By 2nd set 75.96 chs.; the mean of which is 76.00 chs. from last cor. + 4.00 chs. = 80.00 chs.
4800 ft [el. 3444]	80.00	N. 150 lks. + Correction 594 lks. N. = 744 lks. N. from the tangent.
		Set temporary cor.
		Land, rough slope and valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus in valley.
		Pinon and oak brush on slope.
		Alt. 4800 ft.
		Temp. 80°.

Altitude	Chs.	
		324th Mile
		S. 89° 51′ E. on the tangent to the parallel. Over gently rolling valley.
	.50	Wagon road, bears N. and S.
	2.00	Dry arroyo, course S. E.
	31.00	Darling's 9th mile cor., bears N. about 9.00 chs. dist.
		I destroyed this cor.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is nothing; the mean is 80.00 chs.
4875 ft.	80.00	N. 172 lks. + Correction 612 lks. N. = 784 lks. N. from the tangent.
		Set temporary cor.
		Land, gently rolling valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and cactus.
		Alt. 4875 ft.
		Temp. 75°.

		325th Mile
		S. 89° 50′ E. on the tangent to the parallel
	6.20	Wagon road, bears N. W. and S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 80.01 chs.,
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
4890 ft.	80.00	N. 196 lks. + Correction 630 lks. N. = 826 lks. N. from the tangent,
[fol. 345]		Set temporary 325th mile cor., and astronomical monument No. 7. This places this temporary monument 422 lks. S. of the 37th parallel, as determined by astronomical observations made on the nights of Nov. 3rd, 4th, and 7th, 1902. This being within the limit of 3″ of arc, allowed by the Hon. Commissioner.
		See page 411.
		Land, nearly level valley.
		Soil, sandy loam, 3rd rate.
		Vegetation, grass and sage.
		Alt. 4890 ft.
		Temp. 74°.

June 25th, 1903.

On the afternoon of June 6th, 1903, I carefully adjust the transit as to levels and collimation, and

Altitude Chs.

compare the steel tapes with the standard, and find them of correct length.

At the point for the temporary 325th mile cor., June 7th, 1903, at 2h 30m A. M., l. m. t., I observe Polaris at Eastern elongation and mark a point in the line, so found, on a plug driven in the ground 10 chs. N. of my station.
At 7h 10m A. M., I lay off the azimuth of Polaris 1° 30.9′ to the West and mark a point in the true meridian on a plug driven in the ground N. of my station.
The magnetic bearing of this meridian is N. 12° 45′ W.
This gives magnetic declination 12° 45′ E. I now lay off an angle of 90° from the meridian, from the N. to the E. for the tangent to the parallel.
In all these observations and the subsequent turning of angles, the mean of four sights was used, with the telescope reversed at each sight.

[fol. 346]

326th Mile

East on the tangent to the parallel.

9.13 Our temporary astronomical station P.45 chs. N.

16.10 Dry bed of Sheep Pen Canon Creek, 20 lks. wide, course S.

25.00 Foot of hills bears N. W. and S. W.
Leave Cimarron valley; ascend.
Angle 14° + Rod 12.60 double = 2520 ft. × .9415 = 2372.58 ft. + C. = 1.11 ft. = 2373.69 ft. = 35.96 chs. + 25.20 chs. = 61.16 chs.

25.20 Stadia point, thence by stadia measurement.

32.20 Darling's 7th mile cor., bears N. 1.15 chs. dist.
A sandstone 28x12x4 ins. in pile of stone.
I destroy this cor.

61.16 Stadia point on top of wall, W. edge of high mesa, about 700 ft. above Cimarron Valley, bears N. E. for about 10 chs., then N. W. and S. of line bears S. W.
Difference between measurements of 44.04 chs., by 2 sets of chainmen is 2 lks., position of middle point,
By 1st set 44.05 chs.,

Altitude	Chs.	
		By 2nd set 44.03 chs.; the mean of which is 44.04 chs.+35.96 chs.=80.00 chs.
5550 ft.	80.00	N. .76 of a link from the tangent.
		Set a temporary cor.
		Land, rough and broken and mesa.
		Vegetation, grass and cactus.
		Soil, sandy, 3rd rate.
		Alt. 5550 ft.
		Temp. 70°.

327th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Over mesa land.
	20.50	Head of draw, drains S. W.
	32.25	Darling's 6th mile cor. bears N. 130 lks. dist. A lava stone 16x12x6 ins. marked C. on N., 6 M. on E., N. M. on S. and 1868 on W. faces. I destroyed this cor.
[fol. 347]		All the Darling corners from here Eastward to the McComb cor. were found and the marks obliterated.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 4 lks., position of middle point,
		By 1st set 80.02 chs.,
		By 2nd set 79.98 chs., the mean of which is 80.00 chs.
5525 ft.	80.00	N. 3 lks. from the tangent.
		Set temporary cor.
		Land, mesa, gently rolling.
		Soil, sandy, 3rd rate.
		Vegetation, grass and cactus.
		Alt. 5525 ft.
		Temp. 70°.

328th Mile

		S. 89° 59′ E. on the tangent to the parallel.
		Over mesa land.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 80.01 chs.,
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
5490 ft.	80.00	N. 7 lks. from the tangent.
		Set temporary cor.

Altitude	Chs	
		Land, gently rolling mesa.
		Soil, sandy, 3rd rate.
		Vegetation, grass and cactus.
		Alt. 5490 ft.
		Temp. 70°.

329th Mile

		S. 89° 58′ E. on the tangent to the parallel.
		Over mesa land.
	63.00	Head of rocky gulch, 50 ft. deep, course S. E.
	76.00	Head of rocky canon 75 ft. deep, course S.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 8 lks., position of middle point,
[fol. 348]		By 1st set 80.04 chs.,
		By 2nd set 79.96 chs.; the mean of which is 80.00 chs.
5450 ft.	80.00	N. 12 lks. from the tangent,
		Set temporary cor.
		Land, gently rolling.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass, cactus, scattering cedar along gulches.
		Alt. 5450 ft.
		Temp. 72°.

June 7th, 1903.

I examine the transit, compare the steel tapes with the standard, find all correct and in adjustment.

330th Mile

		S. 89° 57′ E. on the tangent to the parallel.
	20.00	Enter timber and brush.
	30.00	Head of canon, course N. E.
5300 ft.	50.00	On spur, slope N. E.
5200 ft.	80.00	Comes in canon, bears S.
		Impracticable to establish the cor. at this point.
		Land, rough and broken.
		Soil, sandy and rocky, 3rd rate.
		Vegetation, grass, cedar and pinon timber; oak brush.
		Alt. 5200 ft.
		Temp. 70°.

Altitude	Chs.	831st Mile
		S. 89° 57' E. on the tangent to the parallel. Ascend.
5350 ft.	80.00	N. 20 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for the 330th mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N.; N. M. on S. and 330.1 M. stamped in the center.
[fol. 349]		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post. Pits impracticable. A cedar tree 6 ins. dia. bears S. 49½° E. 12 lks. dist. marked N. M., 330.1 M., B. T. No other trees within limit. This cor. stands on E. bluff about 110 ft. above bottom of canon, bears N. and S. Alt. 5300 ft. Temp. 70°.
	20.00	Rocky canon about 100 ft. deep, course S.
	41.23	A sandstone 16 x 10 x 6 ins. in what has once been a very large mound of earth about 10 ft. in dia., bears N. 2.05 chs. from the tangent. This stone is marked 103 L. on N., N. M. 1874 and the word "Major" below on S. This, I believe, to be the Col. Johnson monument.
	57.00	Head of rocky canon, course S. E.
		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 10 lks., position of middle point. By 1st set 80.05 chs., By 2nd set 79.95 chs.; the mean of which is 80.00 chs.
5110 ft.	80.00	N. 27 lks. from the tangent. Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 331st mile cor. A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 331 M. stamped in the center. Raised a mound of stone, 5 ft. base 2 ft. high around the post. Pits impracticable. No bearings. Land, mesa, somewhat broken. Soil, sandy, 3rd rate. Vegetation, grass, cactus; scrub cedar and pinon in the canons. Alt. 5110 ft. Temp. 70°.

Altitude	Chs.	
[fol. 350]		332nd Mile
		S. 89° 56′ E. on the tangent to the parallel
	1.53	Stadia measurement.
		Angle 2° — Rod 8.15 double = 1630 ft. × .9988 = 1628.04 ft. + C. = 1.15 ft. = 1629.19 ft = 24.68 chs. + 1.53 chs. = 26.21 chs.
	17.00	Head of canon, course S. E.
	26.21	Stadia point.
		Stadia measurement.
		Angle 0° Rod 8.00 double = 1600 ft. + C. = 1.15 ft. = 1601.15 ft. = 24.26 chs. + 26.21 chs. = 50.47 chs.
	37.00	Bottom of canon, about 150 ft. deep, course S. E.; ascend.
	50.47	Stadia point on mesa. S. side of canon, bears N. W. and S. E.
		Thence by tape measurement.
		Difference between measurements of 31.07 chs. by 2 sets of chainmen is 2 lks., position of middle point.
		By 1st set 31.07 chs.
		By 2nd set 31.05 chs.; the mean of which is 31.06 chs. + 48.94 chs. = 80.00 chs.
5100 ft.	80.00	N. 37 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom 2 ft. in the ground for 332nd mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S. and 332nd M. stamped in the center.
		Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.
		No bearings.
		This cor. stands on mesa about 1½ chs. S. of canon wall, that bears N. W. and N. E.
		Land, mesa, broken by canons.
		Soil, sandy, 3rd rate.
		Vegetation, grass and cactus on mesa; scrub cedar in canons.
		Alt. 5100 ft.
		Temp. 70°.
[fol. 351]		333rd Mile
		S. 89° 55′ E. on the tangent to the parallel.
		Difference between measurements of 29.10 chs. by 2 sets of chainmen is nothing; the mean is 29.10 chs.

Altitude	Chs.	
	29.19	On wall of canon bears N. E. and S. W.
		Thence by stadia measurement,
		Angle 7° — Rod 6.70 double = 1340 ft. × .9851 = 1320.03 ft. + C. = 1.14 ft. = 1321.17 ft. = 20.02 chs. + 29.19 chs. = 49.12 chs.
	29.75	Capt. Macomb's monument, which was Darling's initial cor. bears N. 143 lks. from the tangent. The offset for this point being 41 lks. places the monument 93 lks. N. of the boundary line as established by me.
		This monument consists of a pile of stone about 10 ft. in dia. and 6 ft. high, on top of which I found a stone 18 x 12 x 4 ins. marked 103 W. L. 1868. I obliterated the marks on this stone.
	40.00	Bottom of canon about 300 ft. deep, course N. E. Ascend.
	49.12	Stadia point on spur, slope N., about 100 ft. above bottom of canon.
		Stadia measurement,
		Angle 8° — Rod 7.50 double = 1500 ft. × .9806 ft. = 1470.90 ft. + C. = 1.14 ft. = 1472.04 ft. = 22.30 chs. + 49.12 chs. = 71.42 chs.
4600 ft.	68.00	Bottom of canon, course S.
	71.42	Stadia point,
		Angle 18° + Rod 10.50 single = 1050 ft. × .9045 = 949.72 ft. + C. = 1.09 ft. = 950.81 ft. = 14.40 chs. + 71.42 chs. = 85.82 chs. — 80.00 chs. = 5.82 chs. on 33⅓rd mile.
	89.06	Comes on steep slope of canon wall. Impracticable to establish the cor. at this point.
		Land, broken, rough and rocky.
		Soil, rocky and sandy, 3rd rate.
		Vegetation, grass and sage; scrub cedar and pinon.

[fol. 352]

33⅓rd Mile.

S. 89° 57' E. on the tangent to the parallel.

	5.82	Stadia point on canon wall, bears N. and S.
		Thence by tape measurement,
1900 ft.	6.40	N. 50 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long with flanges at the bottom, 10 ins. in the ground to bed rock, for 33⅓rd mile cor.
		A brass cap on the top of the pipe has raised letters, Colo. on N., N. M. on S., and 33⅓ stamped in the center. Raised a mound of stone, 5 ft. base, 2 ft. high, around the post.
		Pits impracticable.

Altitude Chs.

A cedar tree 7 ins. dia. bears N. 41½ E. 109 lks. dist. marked Colo., 333.08 M., B. T.
A pinon tree 5 ins. dia. bears S. 74½ E. 74 lks. dist. marked N. M., 333.08 M., B. T.
No other trees within limits suitable for bearing trees.
Alt. 4900 ft.
Temp. 68°.
Thence by stadia measurements, descend.
Angle 8° — Rod 9.33 double = 1866 ft. × .9806 = 1829.80 ft. + C. = 1.14 ft. = 1830.94 ft. = 27.74 chs. + 6.40 chs. = 34.14 chs.

34.14 Stadia point, at foot of hill about 200 ft. below cor. bears N. W. and S. W. Thence by tape measurement, across mouth of little valley from S. W.

70.90 Point on E. slope near foot of butte.
Difference between measurements of 45.86 chs. by 2 sets of chainmen is 4 lks., position of middle point.
By 1st set 45.88 chs.,
By 2nd set 45.84 chs., the mean of which is 45.86 chs. + 34.13 chs. = 80.00 chs.

4640 ft. 80.00 N. 62 lks. from the tangent.
Set an iron pipe 3 ins. dia., 9 ft. long with flanges at the bottom 2 ft. in the ground for the 334th mile cor.
A brass cap on the top of the pipe has raised [fol. 353] letters, Colo. on N., N. M. on S. and 334 M. stamped in the center.
Raised a mound of stone, 5 ft. base, 2 ft. high around the post. Pits impracticable.
A x on a sandstone 15 x 10 x 8 ft. above ground bears S. 31° W. 38 lks. dist., marked N. M., 334 M., B. O.
A x cross on a sandstone 20 x 12 x 8 ft. above ground bears N. 6° 10' E. 200 lks. dist. marked Colo., 334 M., B. O.
Land, rough and broken.
Soil, sandy, 3rd rate.
Vegetation, grass, sage, cactus, scattering scrub cedar and pinon brush.
Alt. 4640 ft.
Temp. 68°.

June 8th, 1903.

I examine the transit, compare the steel tapes with the standard, and find all correct and in adjustment.

Altitude	Chs.	335th Mile
		S. 89° 54′ E. on the tangent to the parallel. Descending gradually across valley.
		Enter Carriso Valley, bears N. E. and S. W.
	71.00	A stone monument 12 x 12 x 24 ins. above ground firmly set, bears North 185 lks. from the tangent Our offset for this point is 75 lds. This would place this monument 140 lks. N. of the boundary line as run by me. This monument is marked "Colo." on N., C. M. on E., "N. E. cor N. M." on S. and "C. C. 1900 on W.," of the cor. A dressed sandstone shaft 15 ins. square, 4½ ft. above ground and firmly set bears N. from the same point on the tangent 15.93 chs.
		This shaft is marked COLORADO on N., 37 N. L. on E., 103 W. L. on S., and 1881 on W.
		I left both these monuments as I found them.
[fol. 354]		Difference between measurements of 80.00 chs. by 2 sets of chainmen is 2 lks., position of middle point,
		By 1st set 80.01 chs.,
		By 2nd set 79.99 chs.; the mean of which is 80.00 chs.
4600 ft.	80.00	N. 76 lks. from the tangent.
		Set an iron pipe 3 ins. dia. 4 ft. long, with flange at the bottom, 2 ft. in the ground for 335th mile cor. A brass cap on the top of the pipe has raised letters Colo. on N., Okla. on S. and 335 M. stamped in the center. Dug pits 36 x 36 x 18 ins. N., S., E. and W. of the cor. 6 ft. dist. Raised a mound of earth 5 ft. base, 2 ft. high, around the post.
		N. edge of round butte bears S. 89° E. about 3 miles dist. Small round butte in valley bears S. 63° 10′ W. about 2 miles dist.
		Land, gently rolling, valley.
		Soil, sandy, 2nd rate.
		Vegetation, grass and cactus.
		Alt. 4600 ft.
		Temp. 60°.

1902

We hereby certify that we assisted Howard B. Carpenter, United States Surveyor and Astronomer, in re-surveying all parts or portions of the South Boundary of the State of Colorado which are represented in the foregoing field notes as having been re-surveyed by him and under his direction; and that said survey has been in all respects

to the best of our knowledge and belief, well and faithfully surveyed, and the corner monument established according to instructions furnished by the Commissioner of the General Land Office.

(Signed) L. B. Neighbour, Transitman. E. Potter Lockwood, Chainman. Walter Stone, Chainman. Ernest G. Spinney, Chainman. Linus Olson, Chainman. C. D. Carpenter, Moundman. J. W. Miller, Moundman. Chas. (his X [fol. 235] mark) Windquest, Moundman. Grover Bowman, Axman. O. J. Bowman, Axman. Wm. D. Skinner, Rodman. J. L. Weintz, Flagman. J. G. Myers, Flagman.

Subscribed and sworn to before me this 15th day of December, 1902. (Signed) Howard B. Carpenter, U. S. Surveyor and Astronomer.

1903

Final Oaths of Assistants

We hereby certify that we assisted Howard B. Carpenter, United States Surveyor and Astronomer, in re-surveying all those parts or portions of the South Boundary of the State of Colorado which are represented in the foregoing field notes as having been re-surveyed by him and under his direction; and that said survey has been in all respects, to the best of our knowledge and belief, well and faithfully surveyed, and the corner monuments established according to instructions furnished by the Commissioner of the General Land Office.

(Signed) Oscar McClellan, Transitman. Walter Stone, Chainman. Wm. L. Horton, Chainman. C. Holliday, Chainman. Potter Lockwood, Chainman. C. D. Carpenter, Moundman. Chas. (his X mark) Windquist, Moundman. Linus Olson, Moundman. Harry Weimer, Axman. Silas S. Weimer, Axman. Ed. P. Blanchard Rodman. Fred F. Lockwood, Flagman. Wm. A. Pinckard, Flagman.

[fol. 235] Subscribed and sworn to before me this 21st day of July, 1903. (Signed) Howard B. Carpenter, U. S. Surveyor and Astronomer.

1903

Final Oath of Assistants

We E. P. Blanchard, F. E. Wright and Andrew Ferrara, do solemnly swear that we assisted Howard B. Carpenter, U. S. Surveyor and Astronomer, in resetting all those monuments and mile corners on that portion of the 37th parallel of North Latitude, in the resurvey of the South Boundary of the State of Colorado, represented

in the foregoing field notes as having been reset by him, and that the said monuments and mile corners, have been established in accordance with the Manual and his special instructions, to the best of our knowledge and belief.

(Signed) Ed. P. Blanchard, Chainman. F. E. Wright, Chainman. Andrew (his X mark) Ferrara, Moundman.

Subscribed and sworn to before me this Twenty-ninth day of October, 1903. (Signed) Howard B. Carpenter, U. S. Surveyor and Astronomer.

Final Oath of U. S. Surveyor and Astronomer

I, Howard B. Carpenter, United States Surveyor and Astronomer, do solemnly swear that in pursuance of a contract with Hon. Binger Herman, Commissioner of the General Land Office, bearing date of July 7th, 1902, and in strict conformity to the laws of the United States and the instructions furnished me by Acting Commissioner, W. A. Richards, I have well, faithfully and truly, in my own proper person, re-surveyed, re-marked and re-established the boundary line between the State of Colorado and the Territory of New Mexico,—and the State of Colorado and the Territory of Oklahoma,—the same [fol. 357] being that portion of the parallel of thirty-seven degrees North Latitude, lying between the twenty-fifth and the thirty-second degrees of West Longitude from Washington; that I have destroyed such evidences as I have been able to find, of corners monuments originally established on said line by E. N. Darling, U. S. Surveyor.

And I do further solemnly swear that all the corners of said re-survey have been established and perpetuated in strict accordance with the Manual of surveying Instructions and the special written instructions of the Hon. Acting Commissioner and in specific manner described in the field notes and that the foregoing are the true field notes and astronomical notes of such re-survey and should any fraud be detected I will suffer the penalty of perjury, under the provisions of an act of Congress approved August 8th, 1846.

(Signed) Howard B. Carpenter, United States Surveyor and Astronomer.

Subscribed and sworn to before me this 5th day of January, 1904. (Signed) Lomi Kirk, Clerk of the United States Circuit Court for the District of Wyoming. (Seal.)

Department of the Interior

General Land Office

February 25th, 1904.

The foregoing field notes of the re-survey of the Boundary Line between the State of Colorado and the Territories of New Mexico and Oklahoma, executed by Howard B. Carpenter, U. S. Surveyor, under

This contract with the Commissioner of the General Land Office, dated July 7th, 1902, having been examined and found correct are hereby approved.

(Signed) W. A. Richards, Commissioner.

Department of the Interior

U. S. Surveyor General, Santa Fe, New Mexico

I, Lucius Dills, U. S. Surveyor General for the District of New Mexico, hereby certify that the foregoing 434 pages of type-written [fol. 358] matter is a true and correct copy of the Duplicate Original field notes now on file in my office, of the survey of the boundary line between the State of Colorado and the Territories of New Mexico and Oklahoma, as executed by Howard B. Carpenter, U. S. Surveyor, under instructions from the Commissioner of the General Land Office, and that this Copy is a full and complete record of such survey except the Astronomical Data and Calculations upon which the surveyor based the establishment of the Astronomical Monuments placed by him at intervals along and upon said line of survey.

Witness my hand and Official Seal, at my office in the City of Santa Fe, State of New Mexico, on this the 8th day of November, 1918.

Lucius Dills, U. S. Surveyor General for New Mexico. (Seal.)

[fol. 359] SUBPŒNA AND MARSHAL'S RETURN—Filed Nov. 14, 1919

THE UNITED STATES OF AMERICA, ss:

[Seal of the Supreme Court of the United States.]

The President of the United States to the State of Colorado, Greeting:

For certain causes offered before the Supreme Court of the United States, having jurisdiction in Equity, you are hereby commanded that, laying all other matters aside and notwithstanding any excuse, you be and appear before the said Supreme Court, holding jurisdiction in Equity, on Monday, March 1st, 1920, at the City of Washington, in the District of Columbia, being the Seat of the National Government of the United States, to answer unto a bill of complaint of the State of New Mexico exhibited against you.

Hereof you are not to fail at your peril.

Witness the Honorable Edward D. White, Chief Justice of the United States, at the City of Washington, the 29th day of October, A. D. 1919.

James D. Maher, Clerk of the Supreme Court of the United States.

Service of the above Subpoena and a certified copy of the Bill of Complaint therein mentioned are this 19th day of November, 1919, accepted and acknowledged.

Oliver H. Shoup, Governor of the State of Colorado. Victor E. Keyes, Attorney-General of the State of Colorado.

[fol. 360] Office of the Marshal, Supreme Court U. S.

Came to my hand the 19th day of October, 1919, and executed through acceptance of service in writing by Oliver H. Shoup, Governor of the State of Colorado, and Victor E. Keyes, Attorney-General of the State of Colorado, on the 19th day of November, 1919.

Witness my hand this 14th day of November, 1919, at the City of Washington.

Frank K. Green, Marshal Supreme Court U. S.

[fol. 361] [File endorsement omitted.]

[fol. 362] Supreme Court of the United States

[Title omitted]

Minute Entry of Order Granting Leave to File Answer and Cross-bill—March 1, 1920

Leave granted to file answer and cross-bill on motion of Mr. E. P. Taylor in behalf of counsel for defendant.

[fol. 363] In the Supreme Court of the United States

Original, No. 25

[Title omitted]

Motion for Leave to File Answer and Cross-bill—Filed Mar. 4, 1920

To the Honorables the Chief Justice and Associate Justices of the Supreme Court of the United States:

Motion for leave to file Answer and Cross Bill of the State of Colorado to the Bill of Complaint in the above named cause.

Comes now the State of Colorado and moves this Honorable Court for leave to file its Answer and Cross Bill to the Bill of Complaint of the State of New Mexico in the above named cause, and that process issue requiring the complainant to answer said cross bill.

Respectfully submitted, the State of Colorado, by Victor E. Keyes, Its Attorney General.

[fol. 364] [File endorsement omitted]

IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

ANSWER AND CROSS-BILL OF THE STATE OF COLORADO TO THE BILL OF COMPLAINT—Filed Mar. 1, 1920

[fol. 365] To the Honorables the Chief Justice and Associate Justices of the Supreme Court of the United States:

The Answer and Cross Bill of the State of Colorado to the Bill of Complaint of the State of New Mexico.

And now comes the State of Colorado, the defendant, and for answer to said bill, says:

I

This defendant admits that the ground upon which the Court's jurisdiction of the matters set forth in the bill of complaint depends, is that the said bill sets out a controversy between two states of which this Court has original jurisdiction.

II

This defendant admits that by the legislation of Congress, and by the Constitution of the State of New Mexico under which the said State was admitted into the Union of States, the northern boundary line thereof extends along the 37th parallel of North latitude from the intersection of said parallel with the 32nd meridian of longitude West from Washington in an easterly direction to the point where said parallel of latitude intersects the 103rd meridian of longitude West from Greenwich, and avers that the State of New Mexico was admitted into the Union of States on the 5th day of January, 1912.

III

This defendant admits that on the 7th day of July, 1902, Howard B. Carpenter, a United States Surveyor, entered into a contract with the United States to re-survey, re-establish and remark the boundary line between Colorado and the Territories of New Mexico and Oklahoma, and that in pursuance of said contract the said Carpenter did thereafter proceed to re-survey, re-establish and re-mark the said boundary line as is shown by the record and field notes of his work, and admits that said field notes were approved by the then Commissioner of the General Land Office; but defendant avers that said Carpenter survey and his field notes of the said boundary line were never confirmed by the Congress of the United States, nor by either [fol. 366] the state of Colorado, or the Territory or State of New Mexico, but that, on the contrary, an effort was made to confirm the said Carpenter survey in the first session of the 60th Congress, by the introduction in the Senate of Senate Joint Resolution No. 78, which

passed the Senate and the House of Representatives, and was submitted to the President for his approval, and that the said Joint Resolution was on the 19th day of December, 1908, upon the advice of the Attorney General of the United States, disapproved by the President and returned to the Senate with his objections thereto, which Resolution, upon the same day, was laid upon the table by the Senate, and no further action has since been taken thereon by Congress, and the said Carpenter surveys and boundary line as shown by said field notes, failed to become effective in any respect and was never recognized by the General Land Office of the United States as the boundary line between Colorado and New Mexico. A copy of said veto message of the President is hereto attached and made a part hereof.

IV

This defendant denies that the line surveyed and established by the said Carpenter, as shown by his field notes, is the true or correct boundary line between the said two states; admits that in disregard of said Carpenter line it has exercised jurisdiction over a considerable amount of territory South of said Carpenter line, and has levied and collected taxes upon property South of said line, and through its Courts, has exercised both civil and criminal jurisdiction over persons and property lying South of said line, but denies that said acts, doings, pretenses or claims of the State of Colorado, or any of the same, are contrary to equity or good conscience or tend to the manifest or any wrong, injury or oppression of the State of New Mexico, or of its citizens or owners of property within its boundaries, or that said acts or any thereof were or are unlawful or in usurpation of the jurisdiction, rights or authority of said State of New Mexico.

V

For further defense to said bill of complaint, this defendant avers that in the Act of Congress, approved March 3rd, 1875, to enable the People of Colorado to form a Constitution and State government, and be admitted into the Union, (18 Statutes at Large, 474), and also by the Constitution adopted by the vote of the People of Colorado, and under which the State of Colorado was admitted into the Union by Proclamation of President Grant, August 1st, 1876, the 37th parallel of North latitude between the 25th and 32nd meridians of longitude West from Washington, was fixed as the southern boundary line of that state; that pursuant to authority of an Act of Congress, approved March 2nd, 1867, (14 Statutes at Large, 466), Ehud N. [fol. 367] Darling, United States Surveyor and Astronomer, by the most approved methods of the time, surveyed and established in the year 1868, the 37th parallel of North latitude so far as it constituted the boundary line between the Territories of Colorado and New Mexico, and marked the same upon the earth's surface by mile corners and monuments, a copy of which survey together with the field notes of his work is attached hereto and made a part hereof, which

field notes of said survey were examined and approved on the 30th day of April, 1869, by the Honorable Joseph S. Wilson, Commissioner of the General Land Office, as appears by his certificate to that effect attached to said field notes.

Defendant avers that for more than thirty (30) years, the position of the said Darling line remained undisputed, and the correctness of its technical execution unquestioned, and as so established the said Darling line has been generally recognized and acquiesced in by both of the States herein involved, and accepted by the Federal government, and is now recognized and accepted by the Federal government as the true and subsisting boundary line between Colorado and New Mexico; and by reason of the right and title acquired as hereinbefore set forth, this defendant from the time said boundary was so established in 1868 to the present time, has held lawful and rightful possession of and exercised dominion and sovereignty, and now claims the same, over the territory down to the said southern boundary line as established by the said Darling, and no farther; county lines have been formed, towns and settlements have grown up, school districts, election districts, voting precincts, land districts and water districts have been created with reference to said line, public officers have been elected, property has been assessed, taxes levied and collected under the authority of the State of Colorado and its courts of both civil and criminal jurisdiction have exercised unquestioned jurisdiction in all places North of said boundary line, and the State of New Mexico has exercised like jurisdiction in all places South of said line. County maps, State maps and maps prepared by the Federal government have for more than forty years last past delimitated said boundary according to said Darling survey, and government post offices have been established as being in Colorado when above said line, and in New Mexico when below said line, and public land surveys on both sides of said line were closed thereon, lands have been disposed of, rights acquired and political boundaries in both Colorado and New Mexico fixed by reference to said line.

The 37th parallel of North latitude, as established by Howard B. Carpenter, passes through several towns lying wholly within the State of Colorado, according to the boundary as originally surveyed by Darling, and along the entire line there is a material, and in many places, excessive variance between the lines of the two surveys, and the [fol. 368] effect of said Carpenter survey if declared the true boundary line would be to remove a considerable strip of territory which is now within the State of Colorado, according to the Darling survey, and place it in the State of New Mexico.

The stone monument established by Capt. Macomb U. S. A. of the Topographical Bureau in 1858, under direction of the War Department, marking the intersection of the 37th parallel of North Latitude with 103° of West Longitude from Greenwich, adopted as the initial point of the Darling Survey, was designated as the northwest corner of Indian Territory, now State of Oklahoma, in 1874 by John J. Major, U. S. Surveyor and Astronomer, in the survey and marking of the boundary between Indian Territory and Colorado Territory. The line attempted to be established by said Carpenter

passed 93 lks south of said Macomb monument and departed from the boundary lines established by both Darling and Major, and said Carpenter obliterated the marks upon said Macomb monument, heretofore and since hitherto recognized as the corner upon the south line of Colorado and common to the States of New Mexica and Oklahoma, and attempted to relocate said common corner at a point about two miles easterly from said long established and accepted Macomb monument.

The said Carpenter survey consisted of a new fixation of the 37th parallel of North latitude independent of the line established by Darling in 1868, and not only failed of confirmation by Congress, but the Federal government up to the present time has declined to recognize the said Carpenter survey as the true boundary line between the said two states, and on the contrary has accepted and still accepts the said Darling survey as the true and correct boundary line between said two states.

All of which matters and things as hereinbefore stated, this defendant avers to be true and this defendant pleads the same in bar to the bill of complaint, and prays the judgment of the Court whether it shall further answer said bill.

Wherefore, having answered fully all the matters in plaintiff's bill set forth, defendant prays this Honorable Court that the prayer thereof be not granted, but that the Court decree that the boundary line between the State of New Mexico and the State of Colorado be, in accordance with said Darling survey, the true boundary line between the said two states, and that the said bill be dismissed and the defendant go hence with its costs in this behalf incurred, and that this defendant have such other and further relief as may be found necessary and as to the Court shall seem meet and proper.

Cross-bill

And now by way of cross complaint and for affirmative relief against the plaintiff, your orator, the State of Colorado, shows to [fol. 369] the Honorables, the Chief Justice and Associate Justices of the Supreme Court of the United States:

That the true boundary line between plaintiff and defendant is described in the foregoing answer and is fully and correctly shown and delineated in the field notes and survey made in 1868, by Ehud N. Darling, attached hereto and made a part of this cross bill, as well as a part of said answer, and for this cross bill defendant adopts the allegations of fact contained in the foregoing answer and makes the same a part of this cross bill, as fully and to all intents and purposes as if the said allegations were set out in detail in this cross bill; and defendant further avers the said Carpenter in making his said survey destroyed and obliterated many of the monuments and corners established by said Darling in making his said survey.

Wherefore, your orator, to the end that it may obtain the relief to which it is justly entitled, and avoid future controversies in reference hereto, prays the Court to grant unto your orator such process of this Honorable Court as may be appropriate to require the plaintiff, the

State of New Mexico to appear and answer (not under oath, answer under oath being hereby expressly waived) to the several allegations in this cross bill contained; and that upon the final hearing hereof the true southern boundary line of the State of Colorado and the northern boundary line of the State of New Mexico, be declared and decreed by this Court to be the line established as aforesaid by Eliud N. Darling in the year 1868, and as the same is shown by the field notes of his work, attached hereto and made a part hereof, and that the defendant have such other and further relief as may be found necessary in order to correctly restore, re-establish and re-mark said Darling line as the boundary line between the plaintiff and defendant, and as to the Court shall seem meet and proper, and that the defendant have and recover its costs herein incurred.

The State of Colorado, by Victor E. Keyes, Its Attorney General. William R. Ramsey, Assistant Attorney General. Charles Roach, Deputy Attorney General. Delph E. Carpenter, of Counsel.

[fol. 370] EXHIBIT TO ANSWER AND CROSS-BILL.

Veto Message of President Roosevelt in re Colorado Boundary Line

December 19, 1908.

To the Senate:

I return herewith, without approval, Senate joint resolution No. 78, "Establishing the boundary line between the States of Colorado and Oklahoma and the Territory of New Mexico," for the reasons set forth in the following communication of the Attorney-General:

"I have the honor to report, with respect to joint resolution S. R. 78, referred by you to this department, that the purpose of the said resolution appears to be to correct the boundary line between the Territory of New Mexico and the States of Colorado and Oklahoma. The practical effect of establishing the new boundary line, so far as the State of Colorado is concerned, would be to remove from the jurisdiction of that State and add to the Territory of New Mexico a strip along nearly the whole of the southern boundary of the said State, in which there are located at least five post-offices and an appreciable number of inhabitants. So far as I am aware no action has been taken by the legislature of the State of Colorado assenting to or accepting the location of the boundary as proposed in this resolution, and from such inquiry as I have been able to make in the very limited time since the resolution reached me, I am led to think that such assent or acceptance on the part of the State is improbable. Under these circumstances, I think it is of very doubtful expediency to have the line mentioned in the resolution accepted by the United States as the true boundary. It is not necessary to express an opinion as to the legal effect of such a resolution upon the rights of the United States or of the Territory of New Mexico or the duties of federal or

territorial officers; but it is clear that the resolution would not be binding upon the State of Colorado, and its adoption might lead to conflicts of jurisdiction within the long strip of territory to which I have referred, and possibly to the escape from legal punishment of those guilty of crimes committed within the said strip. If it is deemed desirable to establish the true boundary line, an appropriate method to effect this would be to invoke, by appropriate proceedings, the original jurisdiction of the Supreme Court."

"I therefore respectfully advise that the joint resolution in question do not receive your signature."

Theodore Roosevelt.

The White House, December 19, 1908.

[fol. 371] EXHIBIT TO ANSWER AND CROSS-BILL

Field-notes of the survey of the 37th parallel of north latitude so far as it constitutes the north boundary of New Mexico, commencing at the 103° and terminating at the 109° of west longitude from Greenwich, by Ehud N. Darling, surveyor and astronomer, under his contract dated May 22nd, 1868

Names of Assistants

Jno. E. McManus, North A. Haight, Chainmen.
Robert Darling, Samuel Meyers, Otto Mangold, Cornermen.
Joel B. Durnall, John E. Jones, Flagmen.
J. Weissner, Astronomer.
Alonzo Mace, Asst. Astronomer.

Commenced July 19, 1868.
Completed November 18, 1868.
Standard chain compared with standard measure at Surveyor General's Office, Leavenworth, Kansas, June 18, 1868.
Measuring chain compared with standard and found correct.

Chains

[fol. 372] A transit of Troughton & Syms manufacture, London, England, was used in running the boundary. It having two telescopes one on the upper and one on the lower limb; and asimuth circle with two verniers to 30s with reading microscopes attached, and verticle circle and vernier also reading to 30s. A solar compass of Youngs make Phila was used in establishing corners. After carefully adjusting my transit in all its parts,—in order to determine the asimuth at the stone monument established by Capt. Macomb, U. S. A. of the Topographical bureau in 1858 under direction of the War Dept. for marking the 103° of West Longitude from Greenwich, I made the following observations on Polaris.

Chronometer fast on mean solar time. July 19th M. —5h 58′ 56″, with a losing rate of 30s pr day, on mean solar time.

Chains

Observations of Polaris, July 19th, 1868, lower transit.
Time of observations marked by Chronometer P. M.

	11h.	38".	30'
Upper Transit	10.	56	19
Chronometer interval	11	17'	49
Correction for Chronometer rate			11.124
Mean Solar interval	11.	18.	03. 12
Reduction to Sidereal time			1. 51. 38
Sidereal interval	11.	19.	54. 50
		—12.	
			40. 65. 5

Computation of error of asimuth.

Δ 20.02.75=1202.75=18041.25"	log.=	4.2565066
2 d cat 88° 36' .5		8.3877104
Sec. 37°		0.0976514
a 551.60=9' 11" .6		2.7504335

Therefore the instrument asmuithcal deviation is 9' 12" East. The magnetic variation 12° 36' East, as read by vernier, true variation 12° 45' 11". I therefore turn the upper telescope West 90.09' .11", as near as possible, the vernier A. B. reading to 30".

[fol. 373] The cobble stone monument established by Capt. Macomb U. S. A. is 8 feet at base, conical shape, 5 feet high and 2½ feet top. In order to better perpetuate the initial point I set a stone 30x10x8 imbedded 20 in. in monument with 10 in. projecting above same engraved on the S. E. Ind. T. on the S. W. N. M. on the N. W. Col. T. on the N. E. 1868 and 103° W. L.

From which point a

Conical Peak, bears N. 15 W. 8 miles dist.
Point of Bluff bears N. 74½ E., 60 chs. dist.
Point of Bluff bears N. 80½ E., 45 chs. dist.
Point of Bluff bears S. 75½ E., 20 chs. dist.
Point of Bluff bears N. 54½ W., 65 chs. dist.
Stone mound is 75 lks. West of Canon, 250 feet deep, bears N. N. E.

Thence West on Tangent, on 1st Mile

Variation 12° 45' East.

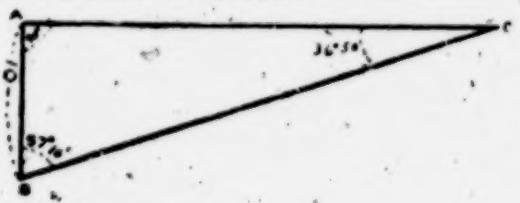
61.50 Top of steep bluff and enter cañon 200 feet deep, bears S. S. E.

Chains

80.00 Offset from tangent to Parallel to 1st mile corner. Marked sand stone 15x10x4 1 M.— and deposited it, 3½ feet in earth. Built conical mound of stone on side hill, 4 feet high, over same. Dug pits 40 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x8 projecting 8 in. above ground, marked on the North, South, West and East sides C.-N. M.-1868-N. M. respectively.
No natural objects near.
Surface except canon level.
Soil 3rd rate.

West on 2nd Mile

Variation 12° 14' East.
0.60 Top of bluff, bears North and South.
17.50 Canon, 75 feet deep, bears S. S. E.
23.00 Leave canon, bears S. S. E.
42.00 To canon, 150 feet deep bears S. S. E. Being impossible to measure the distance with chain over canon I set flag on line, on West side of canon, thence from point of intersection of canon I formed the right angle triangle A B C measured angles A and B A=90 B=57.10, hence the angle C must equal 32° 50' and the measured side AB=40 chs. Thence we have the formula.



Sin. 36° 50'= 9.773457
Sin. 57° 10'= 9.924409
[fol. 374] chs.
Log. 40.00= 1.000000
chs.
15.50 over canon 1.190252

57.50 Leave canon, bears S. S. E.
68.20 Earthen mound situated on a high level plateau established for the 103° Meridian of West Longitude from Greenwich on the 37th Parallel of North Latitud; in the Survey of the Southern boundary of Kansas in 1857. Mound was found partially destroyed, and apparently had been eight feet in diameter and five feet high. Found near mound a stone marked with a brush in black -N. M.-Col.- Ind. Ter.-37 N. L.- on the four sides respectfully.
80.00 Offset from tangent to Parallel to 2nd mile corner.
Marked stone 10x4x3 -2 M.-and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same.

Chains

Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 25x16x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -2 M.- respectively. No natural objects near.
Surface nearly level.
Soil 3rd rate.
July 20th. Measuring chain compared with standard and found correct.

West on 3rd Mile

Variation 12° 57′ East.
6.00 Canon 70 feet deep, bears S. W.
11.50 Leave canon, bears S. W.
65.00 Canon 100 feet deep, bears S. E.
77.00 Leave canon, bears E. S. E.
80.00 Offset from tangent to Parallel to 3d mile corner.
Marked stone 10x6x4 -3 M.- and deposited in 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22x12x10 projecting 8 in. above mound, marked on the North, South, West and East side -C.- -N. M.- -1868- -3 M.- respectively. No natural objects near.
[fol. 375] Surface broken.
Soil 3d rate.

West on 4th Mile

Variation 12° 50′ East.
13.00 Top of Bluff, bears S. E.
At this point the magnetic variation is 18° East and at a point 4 chs. West, 10° East.
35.00 Enter head of canon, 75 feet wide, bears S. S. W.
38.00 Leave canon, bears S. S. W.
Variation 8° East.
47.00 Enters canon, bears South.
55.00 Leave canon, 50 feet deep, bears South.
70.00 Offset from tangent to Parallel to 4th mile corner.
Marked stone 8 x 6 x 4 -4 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26 x 16 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -4 M.- respectively.
From which point a Hay Stack Peak, bears S. 72½ E.

Chains

Hay Stack Peak, bears S. 61½ W.
Round mound bears S. 41 W.
Rabbit Ears mound, bears S. 12¼ W.
Large Hill, bears N. 71° W.
Prominent point of ridge bears N. 12¾ W.
North of this Point is a high plateau
Surface nearly level, except canons.
Soil 2nd rate.

West on 5th Mile

Variation 12° 50' East.

80.00 Offset from tangent to Parallel to 5th mile corner.
Marked stone 8 x 4 x 4 -5M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20 x 16 x 10, projecting 6 in. above mound marked on the North, South, West and East sides -C.- -N. M.- -1885- -5M.- respectively.
No natural objects near.
Soil 3rd rate.
Surface gently rolling, high prairie.

[fol. 376]

West on 6th Mile

Variation 10° to 15° East.

*80.00 Offset from tangent to Parallel to 6th mile corner.
Marked stone 6 x 6 x 3 -6M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26 x 12 x 10 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1886- -6 M.- respectively.
No natural objects near.
Surface gently rolling.
Soil 2nd rate.
July 21st. Measuring chain compared with standard and found correct.

West on 7th Mile

Variation 10° to 15° East.

51.00 Descend into valley of the Cimaron 800 feet below the level of the high prairie and about 2½ miles wide.

Chains

The bluffs are composed mainly of detached rock with four distinct formations.

80.00 Offset from tangent to Parallel to 7th mile corner, situated in canon, 700 feet below high Prairie. Marked stone 12 x 6 x 3 -7 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 16 lks. East and West from base of mound 2 feet square and 18 in. deep. Set said stone 28 x 12 x 6 projecting 8 in. above mound, marked on the North, South, West and East side -C.- -N. M.- -1868- 7 M.- respectively.
No natural objects near.
Surface prairie.
Soil 3rd rate.

West on 8th Mile

Variation 13° East.

10.66 Enter Cimaron valley, bears South.

80.00 Offset from tangent to Parallel to 8th mile corner.
Marked stone 12 x 8 x 4 -8 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set said stone 36 x 42 x 6 projecting 8 in. above mound marked on the North, South, West and East sides -C.- -N. M.- -1868- -8 M.- respectively.

66.37½ From which point, a Pyramid Mound 600 feet high bears N. 77 W.
Pyramid Mound bears S. 40 W., 2 miles dist.
Mound bears S. 30 E., 3 miles dist.
Surface prairie.
Soil 3rd rate.

West on 9th Mile

Variation 13° East

47.66 Pyramid mound, bears N. 800 lks. dist.

80.00 Offset from tangent to Parallel to 9th mile corner.
Marked stone 8 x 6 x 4 -9 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set said stone 20 x 18 x 18 projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- 9 M.- respectively. From which point a sand stone boulder bears N. 60 E., 167 lks. dist.
Conical mound bears N. 45 E. 10 chs. dist.

Chains

Pyramid mound, bears S. 23 E.
Pyramid mound bears S. 10 E. 200 chs. dist.
Surface prairie.
Soil 3rd rate.
July 22nd. Measuring chain compared with standard and found correct.

West on 10th Mile

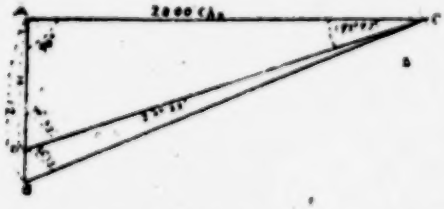
Variation 13° East.

80.00 Offset from tangent to Parallel to 10th mile corner. Marked stone 7 x 6 x 3 -10 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40 x 12 x 8 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -10 M.- respectively.
No natural objects near.
Surface level prairie.
Soil 2nd rate.

West on 11th Mile

Variation 12° 50' East.

5.00 Foot of bluff, bears N. N. W. In order to measure the distance on line, with chain, to top of perpendicular bluff. [fol. 378] or spur, I find the right angle triangle.



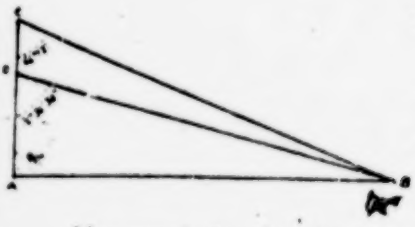
Sin. 23° 33'	=	9.601517	
Sin. 66° 27'	=	9.962233	
chs.			
Log. 12.20	=	1.086360	
27.99.1 chs.		1.447023	

Sin. 19° 39'	=	9.526693	
Sin. 70° 21'	=	9.973942	
chs.			
Log 10.00	=	1.000000	
28 chs.		1.447249	

Therefore the mean is

chs.	lks.
27	99.8

28.00 To top of perpendicular cliff or spur, bears S. E. From flag on line, in valley, on West side of ridge, in order to get the distance to flag on ridge, I found the right angle triangle.



Sin. 23° 48′	=	9.605892
Sin. 66° 12′	=	9.961402
Log. 15 chs.	=	1.176093
34.01 chs		1.531691

Measured Angles A=99. C=66 12′00″. D =73 36′ 30″

Therefore the angles A B C=23.48′ 00″. A B D=16.23.30 and measured sides A C=15 chs. A D=10 chs.

Sin. 15° 23′ 30″=	9.450560	
Sin. 73° 36′ 30″=	9.981979	
Log. 10 chs.=	1.000000	Mean 34 chs.
=34.99 chs.	1.531419	

Therefore the distance is 34 chs. This point is 9.50 chs. west of point of line entering valley.

32.50 Enter valley, bears S. S. E.

30.00 Offset from tangent to Parallel, to 11th mile corner. Marked stone 8 x 6 x 1 -11 M.- and deposited it 3½ feet S. earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides 4C- -N. M.- -1868- 11 M.- respectively.

No natural objects near.

Surface a high ridge (about 600 feet above valley) running to a peak.

In valley nearly level.

[fol 379] Soil 2nd rate.

West on 12th. Mile

Variation 12° 50′ East.

80.66 Offset from tangent to Parallel to 12th mile corner, on flat sand stone, marked —12M— Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 9 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides 4C- -NM- -1868- -12M- respectively.

From which point a

Saddle mound bears N. 45 W. 30 chs. dist.

Pyramid mound bears N. 65 E. 50 chs. dist.

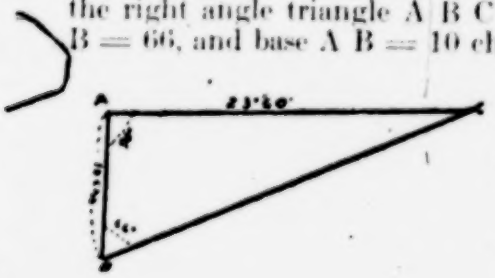
Chains

Point of Bluff bears S. 12 W. 60 chs. dist.
Surface nearly level valley.
Soil 2nd rate.

West on 13th Mile

Variation 12° 50' East.

62.30 It being impossible to measure with chain on line, I found the right angle triangle A B C measured angles A = 90° B = 66, and base A B = 10 chs.



Sin. 23° 51' = 9.606751
Sin. 66° 09' = 9.961235
Log. 10 chs. = 1.000000
22.60 chs. 1.354484

64.00 Foot of bluff, 500 feet high.
80.00 Place for 13¼ mile corner, on side of bluff and impossible to establish corner.
Surface except bluff, rolling prairie.
Soil 2nd rate.
July 23rd. Measuring chain compared with standard and found correct.

West on 14th Mile

Variation 12° 50' East.

4.85 Top of bluff. Built witness mound of cobble stones, 4 feet high. Set sand stone 20 x 16 x 8 marked on the North, South, and West sides -C.- -N. M.- -1868- respectively.
34.76 Top of sand stone bluff, bears S. S. E.
62.83 Enter valley, bears S. S. E.
80.00 Offset from tangent to Parallel to 14th mile corner.
[fol. 380] Marked stone 8 x 6 x 3 -14 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound. 2 feet square and 18 in. deep. Set sand stone 22 x 13 x 13, projecting 8 in. above mound, marked on the North, South, East and West sides -C.- -N. M.- -1868- 14 M.- respectively.
No natural objects near.
Surface, except bluff, gently rolling prairie.
Soil 2nd rate.

Chains

West on 15th Mile

Variation 12° 39' East.

20.00 Leave valley, bears S. E.

80.00 Place for 15th mile corner on side of bluff. Impossible to establish same.
Surface cut up by deep canons.
Soil 3rd rate.

West on 16th Mile

Variation 13° East.

60.00 Leave canon, bears E. S. E.

80.00 Offset tangent to Parallel to 16th mile corner.
Marked stone 8 x 5 x 3 -16 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 40 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M. -1868- -16 M.- respectively.
From which point a.
Scrub cedar tree, bears N. 85 W., 66 lks. dist.
Three pyramid mounds, centre one, bears N. 20½ W.
Saddle mound, bears S. 67½ W.
Conical mound, bears S. 56 W.
Surface broken, except last 20 chs.
Soil 3rd rate.

West on 17th Mile

Variation 13° East.

8.50 To top of bluff. It being impossible to measure with chain on line, I formed the right angle triangle A B C and A D C, measured angles A = 90 B = 76° 20' 30" D = 70° 02' 30" and sides A B = 20.08 chs., side A D = 30 chs.

[fol. 381] Sin. 13° 39' 30" ..... = 9.373454
Sin. 76° 20' 30" ..... = 9.987342
Log. 20.08 chs. ..... = 1.302764

82.63 chs. 1.917152

Chains

	Sin. 49° 57' 30" =	9.883183	
	Sin. 70° 02' 30" =	9.973101	
	Log. 30 chs =	1.477121	Mean 82.62 chs. to flag
	82.61 chs	1.917039	

36.00 Enter valley, bears S. E.
60.00 Leave valley, bears S. E. and ascend bluff.
80.00 Place for 18th mile corner on side of bluff and impossible to establish corner.
Surface broken.
Soil 3rd rate.
July 24th. Measuring chain compared with standard and found correct.

West on 18th Mile

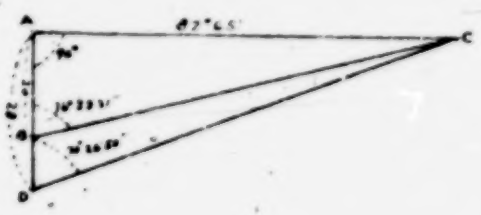
Variation 13° East.
10.50 Top of bluff. Built witness mound of stone 4 feet high, marked on the North, South and West sides "C. - N. M. - 1868. - respectfully, and enter scattering pinon. Pine timber bears N. N. W.
46.00 Leave scattering timber and enter high prairie, bears North.
80.00 Offset from tangent to Parallel to 18th mile corner near edge of bluff. Marked stone 8x4x3, "18 M." and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 10 in. deep—on account of the stone deeper pits could not be dug. Set sand stone 36x18x4 projecting 8 in. above mound marked on the North, South, West and East sides "C. - N. M. - 1868. - 18 M." - respectively.
No natural objects near.
Surface rolling, mostly high prairie.
Soil 3rd. rate.

Chains.

West on 19th Mile

Variation 13° 65' East.

0.00 Top of bluff, bears S. S. E. It being impossible to measure with chain on line I formed the right angle triangle A. B. C.
[fol. 382] A D C Measured angles A = 90 B = 76 23 31 D = 70 26 30.
sides A B = 20 chs. and A D = 28 chs.



Sin. 76° 23' 30" . . . . . = 9.987634
Sin. 13° 36' 30" . . . . . = 9.371591
Log. 20 chs. . . . . = 1.301030
82.63 chs. 1.917073

Sin. 18° 42' 40" = 9.506230
Sin. 71° 17' 20" = 9.976418
Log. 28 chs. = 1.447158
82.67 chs. 1.917346

Mean 82.64½ chs.

Measured back from flag, East 355 lks.

80.00 Offset from tangent to Parallel to 19th mile corner on side hill. Marked sand stone 10x6x3 -19 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high over same. Dug pits 16 lks. East and West from base of mound, 2 feet square and 18 ins. deep. Set sand stone 26x11x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.-N. M.- -1868- -19 M.- respectfully.
No natural objects near.
Surface nearly all bluff.
Soil 3rd rate.

West on 20th Mile

Variation 7° to 18° East.

2.65 To top of bluff, bears S. E.

80.00 Offset tangent to Parallel to 20th mile corner, on side of hill.
Marked sand stone 6x5x4 -20 M.- and deposited it 3½ feet in earth. Built conical mound of cobble stone, over same, 4 feet high. Impossible to dig pits on account of stone.

Chains

Set sand stone 18x10x6 projecting 6 in. above mound, marked on the North, South, East and West sides -C.- -N. M.- -20 M.- -1868 respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 21st Mile

Variation 8° to 18° East.

19.10 A sand stone boulder, 6 feet above ground, 5 feet high, and
[fol. 383] 6 feet diameter.

80.00 Offset from tangent to Parallel, to 21st mile corner, on rock, marked -21 M.-. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 3 feet square and 18 in. deep. Set sand stone 24x7x5, projecting 8 in. above mound, marked on the North, South, West and East side, -C.- -N. M.- -1868- -21 M.- respectively.
No natural objects near.
Surface broken prairie.
Soil 3rd rate.
July 25th. Measuring chain compared with standard, and found correct.

West on 22nd Mile

Variation 10° to 15° East.

7.00 Enter scattering scrub. Cedar timber on hills bears South.

79.00 Canon, bears south.

80.00 Offset from tangent to Parallel, to 22nd mile corner. Marked sand stone 8x6x4 -22M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound. Marked on the North, South, West and East sides -C.- -N. M.- -1868- -22M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 23rd Mile

Variation 10° to 15° East.

76.00 Enter valley of the Cimgron, bears E. S. E. Valley is hilly and stony, except near creek.

80.00 Offset from tangent to Parallel to 23rd mile corner.

Chains

Marked sand stone 10x6x4 -23 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep, marked on the North, South, West and East sides -C.- -N. M.- -1868- -23 M.- respectively.
No natural objects near.
Surface broken prairie.
Soil 2nd rate.

[fol. 384] West on 24th Mile

Variation 13° East.

80.00 Offset from tangent to Parallel to 24th mile corner.
Marked stone 12x6x4 and deposited it, 3½ feet in ground. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -24 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 25th Mile

Variation 13° East.

32.00 Bed of creek—dry on line—banks 5 feet high, course South and West.

35.00 Leave bed of creek, course South. Sandy bottom, and in places stony. Water just South of line.

80.00 Offset from tangent to Parallel to 25th mile corner.
Marked sand stone 8x6x3 -25 M.-, and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 38x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -25 M.- respectively.
No natural objects near.
Surface rolling, covered with stone.
Soil 2nd.
July 26th. Measuring chain compared with standard, and found correct.

West on 26th Mile

Variation 11° to 15° East.

56.00 Leave Cimaron valley, bears S. S. W. and enter hills.

Chains

80.00 Offset from tangent to Parallel to 26th mile corner in small ravine.
Marked stone 8x6x3 -26 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x4 projecting 6 in. above mound, Marked on the North, South, West and East sides -C.- -N. M.- -1868- -26 M.- respectively.
[fol. 385] No natural objects near.
Surface in valley, nearly level, balance broken and stony.
Soil 3rd rate.

West on 27th Mile

Variation 11½° to 14½° East.
22.00 Canon, 60 feet deep, 300 lks. wide, bears S. E.
72.00 Foot of perpendicular bluff, 75 feet high, bears North and South.
77.25 Wall of stone 5 chs. long, and about 15 feet high. Impregnated about 15% with magnetic iron bears E. S. E. and W. N. W.
80.00 Offset from tangent to Parallel, to 27th mile corner. Marked stone 10x6x4 -27 M.- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -27 M.- respectively.
No natural objects near.
Surface broken, covered with various kinds of thick brush.
Soil 3rd rate.
July 27th. Measuring chain compared with standard and found correct.

West on 28th Mile

Variation 13° East.
80.00 Offset from tangent to Parallel to 28th mile corner. Marked sand stone 10x6x3 -X and deposited it 3½ feet in earth. Built conical mound of cobble stone, 4 feet high, over same. Dug pits to 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -28 M.- respectively.
No natural objects near.
Surface broken prairie, covered with stone and cactus.
Soil 3rd rate.

Chains

West on 29th Mile.

Variation 13° East.

13.40 Canon, 300 feet deep, bears N. N. W.

33.76 Over same, bears N. N. W.

61.00 Descend into canon, 400 feet deep, bears N. W. and S. W.,
[fol 386] and enter scattering scrub Pine and Cedar timber. Sides of canon and bluff covered with a promiscuous growth of scrub oak and various kinds of brush.

80.00 Offset from tangent to Parallel to 29th mile corner.
Deposited sand stone 10x8x4, 6 in. in earth, marked x, impossible to dig deeper. Built conical mound of sand stone, 4 feet high, over same. Impossible to dig pits, on account of stone. Set sand stone, 26x10x5 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -29 M.- respectively.
No natural objects near.
Surface broken and stony, covered with Oak, sage and other brush.
Soil 3rd rate.

West on 30th Mile

Variation 13° 10' East.

0.72 Dry bed of Creek, 15 lks. Wide, stony bottom, course N. N. W.

15.50 Dry bed of creek, 15 lks. wide, stony bottom, course E. N. E.

35.00 Bend in dry bed of creek, 15 lks. wide, filled with large sand stone boulders, course E. N. E. and E. S. E.

41.30 Foot of perpendicular bluff, 50 feet high, bears North and South.

80.00 Offset from tangent to Parallel to 30th mile corner.
Marked sand stone 8x6x4 -30 M.-, and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 42x7x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -30 M.- respectively.
No natural objects near.
Surface 1st 50 chs. very broken and stony, covered with Oak and sage brush, balance gently rolling prairie.
Soil 3rd rate.
July 28th. Measuring chain compared with standard and found correct.

Chains

West on 31st Mile

Variation 13° 11' East.

80.00 Offset from tangent to Parallel, to 31st mile corner.

[fol. 387] Marked sand stone 10 x 6 x 4 -31M-, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26 x 12 x 10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -NM- -18- -31M- respectively.

No natural objects near.

Surface rolling prairie.

Soil 3rd rate.

West on 32nd Mile

Variation 13° East.

10.00 Enter brush and scattering Pine timber bears S. E.

27.00 Canon, bears S. S. W.

36.80 Over same, 300 feet deep, bears S. S. W.

51.30 Large cedar tree, about 6 feet at base, and 15 feet high.

80.00 Offset from tangent to Parallel 7.78 lks. to 32nd mile corner.

Marked stone, 8 x 6 x 3 -32M- and deposited it 3½ in earth. Built conical mound of earth, 4 feet high, over same. Impossible to dig pit on account of stone. Set sand stone 26 x 8 x 4 projecting 8 in. above mound marked on the North, South, West and East sides -C- -NM- -1868- -32M- respectively.

No natural objects near.

Surface covered with stone.

Soil 3rd rate.

Astronomical monument No. 1 is 12.50 lks. East of said corner, which is represented by a sand stone 75 x 14 x 11, set 3 feet in earth. Built mound of stone, 5 feet at base and 32 in. dia. Dug pits 6 feet from base of mound, on the North, South, West and East sides, 2 feet square and 18 in. deep. Monument marked on the North, South, West and East sides "Colorado" "New Mexico" "1868" "37 N. L."

No natural objects near.

July 29th. Measuring chain compared with standard and found correct.

Chains

Observations made on Polaris Aug. 2nd, 1868, P. M. and Aug. 3rd, 1868, A. M. Chronometer fast, on mean Solar time, at 12 M.—Aug. 2nd 5. 48. 59. 44

[fol 398]

	h ′ ″
Aug. 2nd, P. M. Polaris Chronometer time	10. 30. 24
Aug. 3rd, A. M. do do do	9. 58. 35
Chronometer interval	11. 28. 11
Correction for rate	14.7
	11. 28. 25.7
Reduction to sidereal time	1. 53.8
Sidereal interval	11. 30. 19.5
	−12
Sidereal time, less 12h	29. 45.5

Rate of chronometer 28.34 per day.

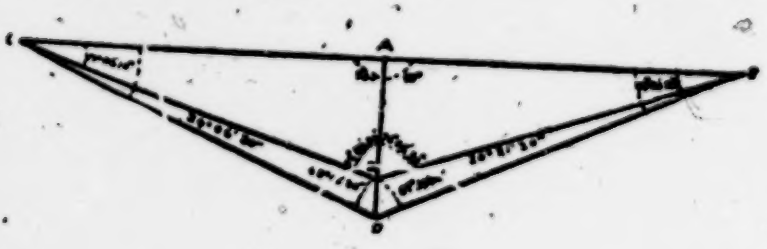
△	8.90′ .25″ = 13353.75	Log.	4.1256033
—	Cot. 88s 36′ .08″ =		8.3887820
2	Sec. 37s		0.0976514
	409.28		2.6120367

Error of Asimuth 6.49″ .28″ East.

West on 33d Mile

Variation 13° 20′ East.

1.50. Top of bluff, bears N. N. W. It being impossible to measure with chain the sides of the bluff, from its top, nearly directly West of 33d mile corner, I set one flag in valley, and one on high ridge, West of valley, and from flag in valley, I formed the right angle triangle, with same perpendicular ABC, ADC, ABE and ADE. Measured the Angles A = 90 B = 72.53′ .50″ D = 65.13′ .30″ B = 76.06′ .30″ D = 69.38′ .40. Measured sides AB = 20 chs. AD = 30 chs.



Chains				
	Sin. 17° .06' .10" =	9.468475	Sin. 24° .46' .30" =	9.622372
	Sin. 72° .53' .50" =	9.980357	Sin. 65° .13' .30" =	9.955867
	Log. 20 chs. =	1.301030	Log. 30 chs. =	1.477121
	65.00	1.812862	65.00	1.812360
[fol. 389]	Sin. 13° .53' .30" =	9.386368	Sin. 20° .24' .20" =	9.541386
	Sin. 76° .06' .30" =	9.987108	Sin. 69° .38' .40" =	9.971995
	Log. 20 chs. =	1.301030	Log. 30 chs. =	1.477121
	80.88 chs.	1.907870	80.86 chs.	1.907730

Mean 80.87 chs. to flag on West of bluff.

47.50 Foot of bluff, bears S. S. W. and enters valley which is Prairie land, covered with grass.

73.00 Dry bed of creek, 30 lks. wide, 8 feet deep, stony bottom course S. S. E.

78.00 Leave valley, bears S. S. E., and ascend hill.

80.00 Offset from tangent to Parallel, to 33d mile corner, on a large flat rock, marked with a +. Built a conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 10 x 6, projecting 6 in. above mound marked on the North, South, West and East sides -C.- -N. M.- -1868- -33M.- respectively.
From which point a
Sand stone boulder, 10 x 6 x 7 feet bears North 7 lks.
Surface in valley level, balance broken.
Soil 1st rate.

West on 34th Mile

Variation 13° 25' East

65.80 Top of high Plateau, bears South.

73.37 Top of high Plateau, bears South.

80.00 Offset from tangent to Parallel to 34th mile corner, on side hill. Marked stone 8 x 6 x 4 -34M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Impossible to dig pits on account of stone. Set volcanic stone 30 x 16 x 13, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- 34M.- *respectfully*.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 35th Mile

Variation 13° 25' East.

10.00 Level Plateau, bears North and South.

80.00 Offset from tangent to Parallel, to 35th mile corner.

Chains

Marked stone 10 x 6 x 4 -35M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over [fol. 396] same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -35M.- respectively.

From which point

Spanish Peak, bears N. 63¼ W.
Spanish Peak, bears N. 67½ W.
Mound, bears N. 50½ W.
Point of bluff, bears N. 19½ W.
Point of bluff, bears N. 3 E.
Hay stack mound, bears N. 52½ E.
Hill, bears S. 29 W.
Mound, bears S. 50½ W.
Mound, bears S. 57 W.
Mound, bears S. 58¼ W.
Hill, bears S. 62½ W.
Surface level Prairie.
Soil 2nd rate.
Aug. 3d. Measuring chain compared with standard and found correct.

West on 36th Mile

Variation 13° 27′ East.

80.00 Offset from tangent to Parallel, to 36th mile corner. Marked stone 8 x 6 x 3 -36M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26 x 10 x 4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -36M.- respectively. No natural objects near.

West on 37th Mile

Variation 13° 35′ East.

50.00 Enter scattering pinon Pine timber, bears North.
55.00 Leave same, bears S. E.
65.00 Top of perpendicular bluff, 3 feet high, bears S. S. W.
79.50 Enter valley, bears S. S. W.
80.00 Offset from tangent to Parallel, to 37th mile corner.

Chains

Marked stone 4 x 3 x 3 -37M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x
[fol. 391] 12x10, projecting 8 in. above mound, marked on the North, South, West and East sides, -C.- -N. M.- -1868- -37 M.- respectively.
No natural objects near.
Surface broken and in places covered with scrub pinon.
Pine timber.
Soil 3rd rate.

West on 38th Mile

Variation 13° 30′ East.

57.00 Dry bed of creek, 10 lks. wide, stony bottom, course E. S. E.

80.00 Offset from tangent to Parallel to 38th mile corner, situated about 250 lks. South of head of dry creek. Marked stone 10x6x3 -38 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides, -C.- -N. M.- -1868- -38 M.- respectively.
No natural objects near.
Surface broken and stony.
Soil 3rd rate.

West on 39th Mile

Variation 13° 30′ East.

64.20 Foot of perpendicular cliff, 125 feet high, bears E. S. E.

69.50 Enter ravine, 50 lks. wide, bears North.

79.00 Enter scrub Pine and Cedar timber, bears North.

80.00 Offset from tangent to Parallel, to 39th mile corner.
Marked stone 10x6x4 -39 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 27x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C. -N. M.- -1868- -39 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

Chains

[fol. 392]

West on 40th Mile

Variation 13° 27′ East.
5.00 Enter canon, bears N. N. E.
12.00 Leave canon, bears N. N. E.
50.00 Leave scattering scrub Pine and Cedar timber and top of perpendicular cliff, 40 feet high, bears S. S. W.
80.00 Offset from tangent to Parallel, to 40th mile corner. Marked stone 6x5x4 -40 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 32x16x10. projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -40 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 41st Mile

Variation 13° 30′ East.
63.66 Top of bluff, bears E. N. E.
80.00 Offset from tangent to Parallel, to 41st mile corner. Marked stone 8x6x3 -41 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -41 M.- respectively.
From which point
A pinon Pine tree, bears N. 80 W. 18 lks. dist.
No other tree near.
Surface broken.
Soil 3d rate.
Aug. 4th. Measuring chain compared with standard and found correct.

West on 42nd Mile

Variation 13° 30′ East.
0.40 Enter scrub pine timber, bears North.
10.00 Leave same, and enter brush.
68.00 Top of bluff, and enter canon, bears E. N. E.
80.00 Offset from tangent to Parallel to 42nd mile corner. Marked stone 6x5x4 and deposited it 3½ feet in earth,

Chains

Built conical mound of earth and stone 4 feet high over same. Dug pits 10 lks. East and West from base of mound.
[fol. 393] 2 feet square, and 18 in. deep. Set sand stone 30x18x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -42 M.- respectively. From which point
A large sand stone boulde , bears South, 10 lks. dist. with a scrub cedar tree just West of stone.
Surface broken.
Soil 3rd rate.

West on 43rd Mile

Variation 13° 25' East.
15.00 Leave canon, bears E. N. E.
49.00 Enter canon, bears S. E.
50.50 Leave canon, bears S. E.
80.00 Offset from tangent to Parallel to 43rd mile corner. Marked stone 10x6x3 -43 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound. 2 feet square and 18 in. deep. Set sand stone 24x8x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -43 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 44th Mile

Variation 13° 20' East.
30.00 Ascend hill, bears N. N. W.
58.00 Enter canon, bears N. N. E.
61.00 Leave canon, bears N. N. E.
80.00 Onset from tangent to Parallel, to 44th mile corner, on side hill. Marked stone 8x6x4 -44 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x7x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -44 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

Chains

[fol 394]

West on 45th Mile

Variation 13° 20' East.

50 00 Offset from tangent to Parallel to 45th mile corner.
Marked stone 8x6x4 -45 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x16x11, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -45 -M.- respectively.
No natural objects near.
Surface hilly and in place covered with volcanic boulders.
Soil 3d rate.

West on 46th Mile

Variation 13° 20' East.

36 00 Enter valley, bears South.

25 20 Wagon road, bears S. E.

13 00 Leave valley, bears S. W., and ascend hill, foot of Ratoon mountains.

80 00 Offset from tangent to Parallel to 46th mile corner.
Marked stone 10x6x4 -46 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 40x20x12, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -46 M.- respectively.
No natural objects near.
Surface broken.
Soil 3rd rate.

West on 47th Mile

Variation 13° 20' East.

33 00 To perpendicular cliff, about 60 feet high, bears E. N. E. Side of cliff covered with volcanic stone.

80 00 Offset from tangent to Parallel to 47th mile corner.
Marked stone 8x6x4 -47 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x16x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -47 M.- respectively.
No natural objects near.

Chains

[fols. 395] Surface 1st 35 chs. broken, covered with volcanic stone, balance level.
Soil 2nd rate.
Aug. 5th. Measuring chain compared with standard and found correct.

West on 48th Mile

Variation 11° to 15° East.

50.00 Top of bluff, 800 feet high, above the level of the country North, and for 200 feet, nearly perpendicular.
I offset North 3 chs. in order to measure the line, thence West 20 chs. offset back to line.

80.00 Offset from tangent to Parallel to 48th mile corner.
Marked stone 10x8x3 -48 M.- and deposited it 3½ feet in earth. Built conical mound of stones 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x12x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -48 M.- respectively.
No natural objects near, surface of upland level, covered with a fine growth of grass.
Soil 2nd rate.

West on 49th Mile

Variation 10° to 15° East.

48.00 Canon, bears N. N. E. It being impracticable to measure with chain on line, on account of ridge, thick brush and cliffs, I offset North 50 chs. and measure West 112 chs. offset to south line and set 50th mile corner.

80.00 Place for 49th mile corner, on side of cliff, impossible to establish corner.
Surface mountainous, covered with stone and various kinds of brush.

West on 50th Mile

Variation 11° to 18° East.

80.00 Offset from tangent to Parallel, to 50th mile corner, near top of bluff. Marked stone 12x10x4 -50 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Set volcanic stone 20 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -50 M.-
No natural objects near.

Chains

[fol. 396] Surface mountainous and stony, covered with Oak and various kinds of brush.
Soil 3d.

West on 51st Mile

Variation 11° to 15° East.

80.00 Offset from tangent to Parallel, to 51st mile corner on side of hill, near foot. Marked stone 10x6x4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20 x 10 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -51 M.- respectively.
No natural objects near.
Surface broken, covered with Oak and various other kinds of brush.
Soil 3d rate.

West on 52nd Mile

Variation 11° to 15° East.

63.00 Enter low scrub pinon pine timber, bears North and South

80.00 Offset from tangent to Parallel to 52nd mile corner, in scrub pinon Pine timber. Marked stone 10x6x4, -52 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over stone. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -52 M.- respectively.
No natural objects near.
Surface broken, covered with Oak and other kinds of brush and in places scattering pinon Pine timber.
Soil 3rd rate.

West on 53d Mile

Variation 12° to 11° East.

26.00 Leave scrub Pine and enter brush Prairie bears North and South.

26.50 Dry bed of Creek, 8 lks. wide, stony bottom, course N. N. W.

80.00 Offset from tangent to Parallel, to 53d mile corner.

Chains

Marked stone 5x4x3 -33 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x12x10, projecting 8 in. above mound, marked on the North, South, [fol. 397] West and East sides -C.- -N. M.- -1868- -53 M.- respectively.

No natural objects near.

Surface broken, nearly covered with various kinds of brush.

Soil 3d rate.

Aug. 6th. Measuring chain compared with standard and found correct.

West on 54th Mile

Variation 12° to 14° East.

27.00 Enter scattering scrub pinon Pine timber, bears South.

80.00 Offset from tangent to Parallel, to 54th mile corner. Marked stone 5x4x3 -353 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set pinon Pine post, 8 feet long, and 6 in. square, leveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides, -C.- -N. M.- -1868- -54 M.- respectively.

No natural objects near.

Surface broken, nearly covered with scattering pinon Pine timber.

Soil 3d.

West on 55th Mile

Variation 12° to 14° East.

63.00 Leave scattering pinion Pine timber and scrub Oak brush, bears North and South.

75.30 Creek, 6 lks. wide, clear water, and gentle current, course N. N. W.

80.00 Offset from tangent to Parallel to 55th mile corner. Deposited stone 8x4x4 marked -55 M.- 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x12x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -55 M.- respectively.

No natural objects near.

Surface broken.

Soil 2nd rate.

Chains

West on 56th Mile

Variation 10° to 15° East.

37.00 Dry bed of Creek, 10 lks. wide, stony bottom, course N. N. W.

80.00 Offset from tangent to Parallel to 56th mile corner

[fol. 398] Marked stone 8x8x6 -56 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -56 M.- respectively

No natural objects near.

Surface rolling.

Soil 2nd rate.

West on 57th Mile

Variation 10½° to 15° East.

40.00 A conical mound, covered with pinon Pine timber, bears S. 47 W.

Saddle mound, bears N. 10 E. 8 chs. dist.

80.00 Offset from tangent to Parallel, to 57th mile corner.

Marked stone 10x6x5 -57 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -57- respectively

No natural objects near.

Surface rolling.

Soil 2nd rate.

West on 58th Mile

Variation 11° to 15° East.

76.00 Top of perpendicular volcanic rock bluff 100 feet above bed of creek = Cabin bears N. 25 W.

78.50 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course North.

80.00 Offset from tangent to Parallel, to 58th mile corner.

Marked stone 10x6x4, -58 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x10x12, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -58 M.- respectively.

From which point

Chains

Cabin bears N. 8 W.
Wall of rock, 30 feet high, bears N. 55 W. about 4 lks. dist.
[fol. 399] Surface broken Praire.
Soil 2nd rate.

West on 59th Mile

Variation 12° to 15° East.
0.35 A ditch dug for irrigation.
1.00 Trail bears North.
11.00 A natural and most complete wall of volcanic stone, extending in a straight line, for a distance of 4 miles. A great portion of the stones composing it are trapezuin, and some parallelopiped in shape, and from their appearance appear to have been angled, and set by the skilled artisan many centuries ago. They will average in weight about 400 lbs; the wall in height to be 50 feet, and is from 50 to 200 feet above valley. The South side portion of the Wall is of various heights, while the North side, is more regular and has a uniform height of about 5 feet. It bears N. 87 E., and S. 87 W.
40.00 Cabin, bears N. 31 E.
80.00 Offset from tangent to Parallel, to 59th mile corner.
Marked stone 8 x 6 x 4 59M. and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in deep. Set volcanic stone 28 x 42 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 59M. respectively.
No natural objects near.
Surface broken.
Soil 2nd rate.
Aug. 7th. Measuring chain compared with standard and found correct.

West on 60th Mile

Variation 9° to 22° East.
35.00 Cabin bears N. 48 W.
80.00 Offset from tangent to Parallel to 60th mile corner.
Marked stone 10 x 6 x 3 60M. and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set volcanic stone 20 x 16 x 10, projecting 6 in. above mound, marked on the North, South, West and East sides C. N. M., 1868 60 M. respectively.

Chains

[fol. 400] No natural objects near.
Surface broken.
Soil 2nd rate.

West on 61st Mile

Variation 14° East.

49.00 Ravine and dry bed of creek, 10 lks. wide, 10 lks. South, course North.

79.50 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course N. E.

80.00 Offset from tangent to Parallel, to 61st mile corner.
Marked stone 6 x 5 x 4 61M. and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28 x 8 x 6 projecting 8 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 61M. respectively.
No natural objects near.
Surface broken.
Soil 2nd rate.

West on 62nd Mile

Variation 13° East.

2.30 Creek, 15 lks. wide, clear water, rapid current, gravelly bottom, course E. S. E.

3.30 Same creek, 15 lks. wide, clear water, rapid current, stony bottom, about 2 in. deep, course E. N. E. Scattering Oak brush on banks.

15.00 Leave valley, bears N. E.

80.00 Offset from tangent to Parallel to 62nd mile corner, on top of hill.
Marked stone 10 x 6 x 4 62M. and deposited it, 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in deep. Set volcanic stone 18 x 16 x 10, projecting 6 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 62M. respectively.
No natural objects near.
Surface hilly.
Soil 2nd rate.

West on 63d Mile

Variation 12° to 14° East.

20.00 Enter valley, bears N. N. W.

33.30 Dry bed of Creek, 20 lks. wide, stony bottom, banks 6 feet [fol. 401] high, course S. S. E.

Chains	
60.00	Leave valley, bears N. N. E.
80.00	Offset from tangent to Parallel 7. 30. 1 lks. to 63d mile corner on side hill.

Marked stone 10 x 6 x 3 63M. and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22 x 11 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides C. N. M. 1868, 63M. respectively.

No natural objects near. Surface broken. Soil 3d rate.

Aug. 8th. Measuring chain compared with standard and found correct.

Astronomical monument is 21.00 chs. East of said corner, and is represented by a charred cedar post, 11 feet long and 12 in. square. Marked volcanic stone 12 x 12 x 4 A. Sta. No. 2 37 N. L. and deposited it in earth. Set post 4 feet in earth, marked on the North, South, East and West sides "Colorado" "New Mexico" "1868" "37 NL." Built mound of cobble stones, 6 feet base and 4 feet high. Dug pits 6 feet, East, West, North and South, 2 feet square and 18 in. deep, from base of mound.

Observations made on Polaris, lower and upper culminations for Asimuth Aug. 9th P. M. Aug. 10th, A. M.

Chronometer fast on mean Solar time, Aug. 9th M, 5. 50. 10. with a loosing rate of 22 5 per day, on mean Solar time.

	h	m	s
Time of lower transit as marked by chronometer, Aug. 9th P. M.—	9	26.	50
Time of upper transit, Aug. 10th A. M.	9	24.	30
Chronometer interval	11.	57.	40
Correction for rate			11.2
Mean solar interval	11.	57.	51.2
Reduction to sidereal time		1.	57.9
Sidereal interval	11.	59.	49.1
	—12		
Less than 12			11

Chains

[fol. 402] Computation for error Azimuth

Δ = 65′ .5	82.5	Log. = 1.916454
	d cot. 82.369	= 8.392381
2	Sec. 37	= 0.097651
Error 2″ .5		0.406486

Observations at 65th mile corner. 21 chs. West of Astronomical Monument No. 2.

West on 64th Mile

Variation 13° 20′ East.

56.50 Canon, 200 lks. wide, bears North.
61.00 Canon, 200 lks. wide bears N. N. E.
75.00 Top of bluff, bears North.
80.00 Offset from tangent to Parallel to 64th mile temporary corner.
Surface broken prairie.
Soil 3d rate.

West on 65th Mile

Variation 11° to 14° East.

29.00 Dry bed of Creek, high banks, course N. W.
48.50 Bend in creek 20 lks. wide, clear water, swift current, stony bottom, banks about 4 feet high, course E. S. E. and E. N. E.
58.00 Same Creek, 20 lks. wide, course East.
75.00 Bend in same Creek, course East.
80.00 Offset from tangent to Parallel, to 65th mile temporary corner.
Surface very broken.
Soil 3d rate.

West on 66th Mile

Variation 12° to 14° East.

5.00 Leave valley, bears South.
24.75 Top of hill.
59.00 Spring branch, 3 lks. wide, course S. E.
68.50 Spring branch, 2 lks. wide course S. E.
80.00 Offset from tangent to Parallel, to 66th mile, temporary corner.
Surface mountainous, covered with volcanic stone and thick growth of Oak and black locust and various other kinds of brush and vines.

Chains

Soil 3rd rate.

[fol 403] Aug. 10th Measuring chain compared with standard, and found correct.

West on 67th Mile

Variation 11° to 15° East.

80.00 Offset from tangent to Parallel to 67th mile, temporary corner.

Surface broken, covered with stone and heavy growth of oak, black locust and various kinds of brush.

Soil 3d rate.

West on 68th Mile

Variation 11° to 15° East.

15.00 Highest point of ridge, 1000 ft. above creek valley.

70.20 Creek, 25 lks. wide, clear water, rapid current and stony bottom, course S. S. E.

80.00 Place for temporary 68th mile corner, but impossible to establish it.

Surface mountainous, covered with volcanic stone and thick undergrowth of Oak, black locust and various other kinds of brush.

Soil 3rd rate.

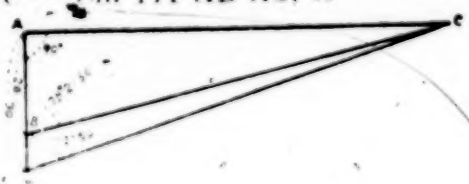
West on 69th Mile

Variation 12° to 14° East.

31.80 Top of perpendicular bluff, 150 feet high, bears S. S. E.

32.60 Built cobble stone witness mound. Set volcanic stone 28x 12x10, marked on the North, South and West sides -C.- -N. M.- -1868- respectively.

The surface between the top of ridge, 15 chs. West of the 68th mile corner, being very rough and broken, making it impracticable to measure the distance with chain with accuracy from that point, and in order to fest the measurement, I formed the triangle ABC and ADC, measured angles A = 90 B= 78° .21′ .50″ D = 72° .50′, hence we have the formula angle C — Sin 111 AB AC, cr



Sin. 11° .38′ .10″ = 9.304697
Sin. 78° .21′ .50″ = 9.990981
Log. 20 chs. = 1.301030

97 chs. 10 lks 1.987214

Chalus

[fol. 404]

Sin. 17° 10′ =	9.470046		
Sin. 72° 50′ =	9.980208		
Log. 30 chs. =	1.477121	Mean 97 chs. 11 lks.	
		to flag.	
97 chs. 12 lks.	1.987283		

There being 49 lks. difference, between the computation, and measurement of the distance of the line, from A to C. I adopted the computed distance, making the distance to the stone monument 97 chs. 11 lks. Therefore the stone monument is 32 chs. 11 lks. on 69th mile corner.

80.00 Offset from tangent to Parallel to 69th mile temporary corner.

Surface in canon broken, covered with a thick growth of oak, black locust, ash and other kinds of brush.

Soil 2nd rate.

Surface after leaving canon, gently rolling.

Soil 3rd rate.

Aug. 11th. Measuring chain compared with standard, and found correct.

West on 70th Mile

Variation 11° to 17° East.

80.00 Offset from tangent to Parallel, to 70th mile, temporary corner.

From which point

A volcanic stone, projecting 36x30x24 in. above surface, is 39 lks. West of temporary corner, marked +.

Surface gently rolling.

Soil 2nd rate.

West on 71st Mile

Variation 11° to 17° East.

53.50 Ledge of Granite rock, bears S. W. and N. E.

80.00 Offset from tangent to Parallel, to 71st mile, temporary corner.

Surface rolling.

Soil 2nd rate.

West on 72nd Mile

Variation 11° to 17° East.

4.00 Highest point on Plateau, from which a point of perpendicular stone bluff, bears S. 27 W.

Chains

Conical mound in gulch, bears S. 12 W.
Point of bluff, bears S. 3½ W.
[fol. 405] Large hill, bears S. 17½ E.
3 mounds, centre one, highest, bears S. 26 E.
Saddle mound bears S. 54 E.
High peak, bears S. 56¾ E.
High peak, bears S. 67½ E.
North point of high mountain ridge, bears N. 64 E.
80.00 Offset from tangent to Parallel to 72nd mile temporary corner.
Surface gently rolling.
Soil 2nd rate.

West on 73d Mile

Variation 10° to 16° East.
0.70 Top of perpendicular volcanic ledge, 200 feet high.
80.00 Offset from tangent to Parallel, to 73d mile temporary corner.
Surface very broken.
Soil 3rd rate.
Aug. 12th. Measuring chain compared with standard and found correct.

West on 74th Mile

Variation 10° to 16° East.
15.00 Creek, 10 lks. wide, clear water, rapid current, stony bottom, high banks, course E. S. E.
80.00 Place for 74th mile corner, on side of ridge.
Impossible to establish temporary corner.
Surface mountainous, covered with a thick growth of Oak and black locust and various kinds of brush and vines, they being so thick and compact as to be almost impossible to penetrate them.
Soil 3d rate.

West on 75th Mile

Variation 10° to 16° East.
12.00 Creek, 15 lks. wide, clear water, rapid current, stony bottom, course S. W.
60.00 Enter valley, bears E. S. E.
60.30 Indian trail, bears E. S. E.
65.00 Creek, 18 lks. wide, clear water, gentle current, sandy bottom, course E. S. E.
80.00 Place for 75th mile corner, impossible to establish temporary corner.

Chains

Surface mountainous, covered with a thick growth of Oak,
[fol. 406] Locust and various other kinds of brush and vines.
Soil 3d rate.

West on 76th Mile

Variation 10° to 16° East.

62.05 Top of bluff, 1000 feet high. Built a witness cobble stone mound and set volcanic stone 30x12x10, in same, marked on the North -C.- South -N. M.- West -1868-. It being impracticable to measure with chain, on line with accuracy on account of the mountainous character of the country between the 72nd mile corner, and this point, in order to test the same, I formed the right angle triangle ABC and ADC, the point, A, being the witness corner, and point C the 72nd mile corner. Measured angles A = 90° B = 75° .07′ .40″ and angles D = 68° .16′ .50″. Sides AB = 80 chs. side AC = 120 chs.

Sin. 14° .58′ .20″ =	9.409365	
Sin. 75° .07′ .40″ =	9.985202	
Log. 80 chs. =	1.903090	
301.22 chs.	2.478927	

Sin. 21° .43′ .10″ =	9.568275	
Sin. 68° .16′ .50″ =	9.968019	
Log. 120 chs. =	2.079181	Mean 301.22 chs.
301.22 chs.	2.478925	

Therefore, the computed distance 301.22 chs. is 83 lks. less than the distance measured with chain, which I think is much more accurate than chain measurement, as great pains was taken to have the angles and bases measured as accurate as possible. Therefore I adopted the computed distance, making the cobble stone mound 75 miles 61 chs. and 22 lks.

66.50 Enter canon, 200 feet deep, bears N. E.

80.00 Offset from tangent to Parallel, to 76th mile, temporary corner in canon.

[fol. 407] Surface mountainous, covered with Oak and Locust brush.
Soil 3rd rate.

Chains

Aug. 13. Measuring chain compared with standard and found correct.

West on 77th Mile

Variation 10° to 16° East.
2.50 Leave canon, bears North.
74.20 Indian trail, bears S. S. W.
80.00 Offset from tangent to Parallel to 77th mile, temporary corner.
Surface rolling.
Soil 3d rate.

West on 78th Mile

Variation 10° to 17° East.
80.00 Offset from tangent to Parallel, to 78th mile, temporary corner.
Surface, a high, gently rolling plateau.
Soil 3d rate.

West on 79th Mile

Variation 9° to 19° East.
76.00 Top of bluff, bears North.
80.00 Offset from tangent to Parallel, to 79th mile, temporary corner.
Surface, a gradual descent to the West.
Soil stony.
3d rate.

West on 80th Mile

Variation 11° to 15° East.

chs.
51.34 Offset to Parallel, said point on parallel is 3.40 lks. South of Astronomical monument No. 3. Therefore the correction will be 17.27/100 lks. per mile.
Aug. 14th. Measuring chain compared with standard and found correct.

East on 80th Mile

Variation

chs.
80.00 Moved temporary corner 3.27.1 North, and set true corner. Marked stone 5x5x4 and deposited it 31½ feet in earth.. [fol. 408] Built conical mound of earth, 4 feet high, over same.

Chains

Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x18, projecting 8 in. above mound, marked on the North -C.- South -X. M.- West -1868- East -80 M.-

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East on 79th Mile

Variation ——.

80.00 Moved temporary corner 3.06.7 lks. North and set true corner.

Marked stone, but impossible to deposit it, on account of stone. Built conical mound of stone 4 feet high over it. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 31x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- X. M.- -1868- -79 M.- respectively. No natural objects near.

East on 78th Mile

Variation ——.

80.00 Moved temporary corner 2.86.2 lks. North, and set true corner.

Marked stone 8x6x4 -78 M.- and deposited it 3½ feet in earth. Built conical mound of earth and volcanic stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 27x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -X. M.- -1868- -78 M.- respectively.

No natural objects near.

East on 77th Mile

Variation ——.

80.00 Moved temporary corner, 2.65.9 lks. North, and set true corner.

Marked stone 8x6x4 -77 M.- and deposited it, 3½ ft. in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x10x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -X. M.- -1868- -77 M.- respectively.

No natural objects near.

Chains

[fol. 409]

East on 76th Mile

Variation ——.

80.00 Moved temporary corner 245.5 lks. North, and set true corner.

Marked stone 11x7x4 -76 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set volcanic stone 26x10x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -76- M.- respectively.

No natural objects near.

East on 75th Mile

Variation ——.

80.00 Place for 75th mile corner, on side hill, impossible to establish it.

East on 74th Mile

Variation ——.

80.00 Place for 74th mile corner on side of bluff, impossible to establish it.

East on 73d Mile

Variation ——.

80.00 Moved temporary corner 1.84.2 lks. North and set true corner.

Marked stone 10x6x8 -73 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square leveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -73 M.- respectively.

No natural objects near.

East on 72nd Mile

Variation ——.

80.00 Moved temporary corner 1.63.7 lks. North and set true corner.

Chains

Marked stone 10x5x1. -72 M.- and deposited it 3½ feet in earth. Built conical mound of volcanic cobble stones, 4 feet high, over same. Dug pits 10 lks. East and West from [fol. 410] base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x10x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -N- M.- -1868- -72 M.- respectively.
No natural objects near.

East on 71st Mile

Variation ——.

80.00 Moved temporary corner 1.43.4 lks. North and set true corner.
Marked stone 10x6x3 -71 M.- and deposited it, 3½ feet in earth. Bifilt conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set sand stone 30x12x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C- -N- M.- -1868- -71 M.- respectively.
No natural objects near.

East on 70th Mile

Variation ——.

80.00 Moved temporary corner 1.43.4 lks. North and set true corner.
Marked volcanic stone 10x6x4 -70 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26x12x8, projecting 8 in. above mound, marked on the North, South, West and East Sides -C- -N. M.- -1868- -70 M.- respectively.
No natural objects near.

East on 69th Mile

Variation ——.

80.00 Moved temporary corner 1.[illegible]3.0 lks. North and set true corner.
Marked stone 10x6x4 and -69 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20x8x7, projecting 6 in. above mound, marked on the North, South, West and East sides -C- N. M.- -1868- -69 M.- respectively.
No natural objects near.

Chains

[fol. 411] East on 68th Mile

Variation ——.

80.00 Place for 68th mile corner, but impossible to establish it.

East on 67th Mile

Variation ——.

80.00 Moved temporary corner 8.21.0 lks. North and set true corner.

Marked stone 10 x 6 x 4 -67M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -67.- -N. M.- -1868- -67M.- respectively.

No natural objects near.

East on 66th Mile

Variation ——.

80.00 Moved temporary corner 6.17.0 lks. North and set true corner.

Deposited volcanic stone 8 x 6 x 3 -66M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 36 x 14 x 4 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -66M.- respectively.

No Natural objects near.

East on 65th Mile

Variation ——.

80.00 Moved temporary corner 4.13.0 lks. North, and set true corner.

Marked stone, 8 x 6 x 4 -65M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18 x 16 x 4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -65M.- respectively. No natural objects near.

Chains

East on 64th Mile

Variation ——.

80.00 Moved temporary corner 2.00 lks. North and set true corner.

[fol. 412] Marked stone 16 x 6 x 3 -64 M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet sqr. and 18 in. deep. Set volcanic stone 18 x 16 x 10 projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -64M- respectively. No natural objects near.

Observations for Asimuth at Astronomical monument No. 3—On d Ursae Minoris, Dec. 86° 36' 40" RA h 18. m 15. s 00.4 and 51 Cephei Dec. 87° 14' 07" RA h 6. m 37. s 35

Aug. 19th. 1868, P. M.—Chronometer fast, at mean noon on Solar time h 5. m 49. s 42. with a loosing rate of 22 s per day.

	h	m	s
Chronometer time of observations of d Ursae Minoris, upper transit	2.	10.	54.
Chronometer time of observation of 51 Cephei	2.	33.	25
Chronometer interval		22.	31
Chronometer rate			0.34
Reduction to Sidereal time			3.7
		22.	35.04
Difference in RA of the two stars		22.	34.7
			.34

$\Delta = 00^s.34 = 5'' 10$ ..... Log. = 0.707570
— Cos. d 86° 36' 40" ..... = 8.771681
Cos. d 87° 14' 07" ..... = 8.683229
Sec. ϕ 37° ..... = 0.097651
Cosec. 6.09 13 ..... = 0.969827

Error 0" 19 ..... 1.229958

West on 80th Mile

Variation 13° 40' East.

51.34 Astronomical Monument No. 3 which is represented by a sand stone 75 x 20 x 12 marked on the North, West and

Chains

East sides "Colorado" "New Mexico", "1868" "37NL." Marked stone 8 x 6 x 6 -37 N. L.- 1868, and deposited it [fol. 112] under stone. Built conical mound of stone, 6 feet at base and 3 feet high.

52.00 Santa Fe road and telegraph line, bears North.

80.00 Offset from tangent to Parallel, to 80th mile, temporary corner.

Surface rolling.

Soil 2nd rate.

West on 81st Mile

Variation 13° 40' East.

1.00 Road, bears E. S. E.

4.75 Same road, bears South.

12.10 Enter 2nd rate, white Pine timber, with thick brush, bears S. E.

80.00 Offset from tangent to Parallel, to 81st mile, temporary corner.

Surface broken.

Soil 2nd rate.

West on 82nd Mile

Variation 13° 40' East.

2.25 Canon, 70 lks. wide, bears South.

36.75 Canon, 100 lks. wide, bears S. S. E.

73.00 Cabin, bears N. 18 W., about 14 chs. dist.

73.00 Canon, 200 lks. wide, bears S. S. E.

80.00 Offset from tangent to Parallel, to 82nd mile, temporary corner.

Surface, mountainous, covered with 2nd rate yellow Pine timber, and an undergrowth of Oak, wild and black locust brush.

Soil 3d rate.

West on 83d Mile

Variation 13° 42' East.

37.00 Canon, 5 chs. wide, bears S. S. E.

80.00 Offset from tangent to Parallel, to 83d mile, temporary corner.

Surface, mountainous, covered with 2nd Pine timber.

Soil 3d rate.

Chains

West on 84th Mile

Variation 13° 43′ East.

7.00 Canon, 100 lks. wide, bears N. N. E.
39.00 Canon, 200 lks. wide, bears N. N. E.
80.00 Offset from tangent to Parallel to 84th mile temporary [fol. 414] corner.

Surface mountainous, covered with 3d rate Pine timber.
Soil 2nd rate.

West on 85th Mile

Variation 13° 43′ East.

9.00 Ratoon Peak, bears N. 38½ W.
42.00 Canon, bears North.
56.00 Leave canon, bears N. N. W.
77.00 Canon, 200 lks. wide, bears N. N. W.
80.00 Offset from tangent to Parallel to 85th mile temporary corner.

Surface broken, covered with 2nd rate Pine timber and an undergrowth of Oak and wild locust brush, etc.
Soil 3d rate.

West on 86th Mile

Variation 13° 46′ East.

17.00 Canon, 200 lks. wide, bears N. N. W.
30.50 Canon, 200 lks. wide, bears N. N. W.
59.00 Canon, 200 lks. wide, bears W. S. W.
64.00 Canon, 300 lks. wide, bears N. W.
80.00 Offset from tangent to Parallel to 86th mile temporary corner.

Surface mountainous, covered with 2nd rate Pine timber and an undergrowth of black locust brush.
Soil 2nd rate.
Aug. 21st. Measuring chain compared with standard and found correct.

West on 87th Mile

Variation 13° 47′ East

8.00 Canon, 4 chs. wide, bears N. N. W.
28.50 Canon, 5 chs. wide, bears N. N. W.
61.50 Canon, 5 chs. wide, bears N. W.
80.00 Offset from tangent to Parallel to 87th mile temporary corner.

Chains

Surface broken, covered with 2nd rate Pine timber and an undergrowth of Oak and locust brush.
Soil 2nd rate.

West on 88th Mile

Variatic .3° 50' East.
25.50 Enter fallen timber, bears North.
[fol. 415]
40.00 Leave fallen timber and enter brush, bears North.
58.50 Leave brush, bears North.
73.00 Creek, 8 lks. wide, clear water, rapid current, stony bottom, course N. N. W.
80.00 Offset from tangent to Parallel, to 88th mile, temporary corner.
Surface broken, East half covered with 2nd rate Pine timber, balance covered with Oak, Locust, brush and vines.
Soil 3d rate.

West on 89th Mile

Variation 13° 50' East.
15.00 Enter scattering Pine timber, bears N. N. W.
23.00 Leave 2nd rate Pine timber, bears N. N. E.
38.50 Canon, 200 lks. wide, bears N. N. W.
77.00 Canon, 30 lks. wide, bears North.
80.00 Offset from tangent to Parallel, to 89th mile temporary corner.
Surface mountainous, covered with Oak and locust brush.
Soil 3d rate.

West on 90th Mile

Variation 13° 50' East.
11.00 Enter 2nd rate Pine timber, bears S. S° E.
28.00 Canon, 300 lks. wide, bears N W.
75.00 Canon, 250 lks. wide, bears N W.
80.00 Offset from tangent to Parallel to 90th mile, temporary corner.
Surface broken, covered with 2nd rate Pine and spruce timber, and an undergrowth of Oak and Locust brush.
Soil 3d rate.
Aug 22nd. Measuring chain compared with standard and found correct.

West on 91st Mile

Variation 13° 50' East.
14.00 Canon, 200 lks. wide, bears N W.
40.00 Canon, 300 lks. wide, bears North.

Chains

80.00 Offset from tangent to Parallel to 91st mile temporary corner.
Surface mountainous, covered with 2nd rate Pine timber and a thick growth of Oak and locust brush.
Soil 2nd rate.

West on 92nd Mile

[fol. 416] Variation 13° 50′ East.
3.00 Canon, 3 chs. wide, bears N. W.
49.00 Prairie valley, bears N. N. W.
51.40 Creek, 10 lks. wide, clear water, rapid current, and stony bottom, course North.
52.50 Leave valley, bears N. N. W.
69.60 Enter valley, bears N. N. W.
69.80 Creek, 15 lks. wide, banks 4 feet high, clear water, 1 in. deep, swift current, stony bottom, course North.
78.60 Wagon road, from Cimaron or Maxwells mines to Trinidad, Colorado.
80.00 Offset from tangent to Parallel to 92nd mile, temporary corner.
Surface mountainous, covered with Locust Oak and various kinds of brush.
Soil 2nd rate.
Different veins of bituminous coal crops out in this section from side hills, etc.

West on 93d Mile

Variation 13° 51′ East.
5.50 Leave valley, bears E. N. E. and S. W.
25.00 Canon, 100 lks. wide, bears S. W.
40.00 Enter 2nd rate Pine timber, bears North.
80.00 Offset from tangent to Parallel, to 93d mile, temporary corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber, and undergrowth of Oak and Locust brush.
Soil 2nd rate.

West on 94th Mile

Variation 13° 52′ East.
40.00 Canon 100 lks. wide, bears S. E.
80.00 Offset from tangent to Parallel to 94th mile temporary corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber and an undergrowth of Oak and Locust brush. Soil 2nd rate.

Chains

West on 95th Mile

Variation 13° 52′ East.
27.50 Canon, 50 lks. wide, bears S. S. E.
72.50 Canon, 3 chs. wide, bears South.
80.00 Offset from tangent to Parallel to 95th mile, temporary
[fol. 417] corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber.
Soil 2nd rate.
Aug. 23d. Measuring chain compared with standard and found correct.

West on 96th Mile

Variation 13° 53′ East.
14.50 Canon, 4 chs. wide, bears S. S. E.
80.50 Offset from tangent to Parallel, to 96th mile, temporary corner.
Surface mountainous, covered with 2nd rate Pine and spruce timber and can undergrowth of Oak, Locust and various other kinds of brush.
Soil 2nd rate.

West on 97th Mile

Variation 13° 54′ East.
4.00 Canon, 40 lks. wide, bears South.
Note: A bituminous coal bed, 25 lks. South about 4 feet thick.
5.00 Leave timber and thick brush, bears E. S. E.
24.50 Canon, 300 lks. wide, bears S. E.
72.00 Enter 2nd rate Pine timber, bears S. S. W.
80.00 Offset from tangent to Parallel to 97th mile, temporary corner.
Surface broken, covered with thick growth of Oak, Locust and various other kinds of brush. Last 8 chs. 2nd rate Pine timber.
Soil 3d rate.

West on 98th Mile

Variation 13° 54′ East.
16.00 Canon, 2 chs. wide, bears S. E.
62.00 Indian trail, bears S. W.
73.50 Canon, 75 lks. wide, bears N. W.
80.00 Offset from tangent to Parallel to 98th mile, temporary corner.

Chains

Surface broken, covered with 2nd rate Pine and Spruce timber and an undergrowth of Oak and Locust-brush.
Soil 3d rate.

[fol. 418] West on 99th Mile.

Variation 13° 54' East.
17.50 Ravine, 100 lks. wide, bears N. N. W.
22.50 Leave 2nd rate timber and enter Oak and Aspen brush, bears N. E.
51.00 Canon, 200 lks. wide, bears N. N. E.
79.00 Enter 2nd rate Pine timber, bears S. E.
80.00 Offset from tangent to Parallel, to 99th mile, temporary corner.
Surface mountainous, about 2/3 of the mile has been burnt over, and covered with fallen timber, grown up to Aspen and Oak brush.
Soil 2nd rate.

West on 100th Mile.

Variation 13° 55' East.
8.00 Canon, 1 ch. wide, bears North.
30.00 Canon, 2 chs. wide, bears N. E.
50.00 Top of mountain, bears S. E.
80.00 Offset from tangent to Parallel, to 100th mile, temporary corner.
Surface broken and mountainous, covered with 2nd rate Pine, Fir and Spruce timber, and an undergrowth of Oak, Locust and other kinds of brush.
Soil 3d rate.
Aug. 24th. Measuring chain compared with standard and found correct.

West on 101st Mile.

Variation 13° 55' East.
12.00 Canon, 200 lks. wide, bears N. N. W.
31.00 Canon, 300 lks. wide, bears N. N. E.
80.00 Offset from tangent to Parallel, to 101st mile, temporary corner.
Surface mountainous, covered with 2nd rate Pine, Fir and Spruce timber and an undergrowth of Oak and Locust brush.
Soil 3d rate.

Chains

West on 102nd Mile

Variation 13° 55' East.
23.75 Canon, 2 chs. wide, 800 feet deep, bears S. S. W.
80.00 Offset from tangent to Parallel to 102nd mile temporary corner.
Surface mountainous, covered with 2nd rate Pine, Fir and Spruce timber and an undergrowth of Oak and Locust brush, stony on side of bluffs
[fol. 419] Soil 3d rate.

West on 103d Mile.

Variation 13° 55' East.
5.00 Enter Aspen timber and brush, bears North.
9.50 Canon, 100 lks. wide, bears North.
36.00 Canon, 150 lks. wide, bears North.
46.00 Canon, bears E. N. E.
61.00 Leave canon, bears E. N. E.
73.00 Enter canon, bears E. N. E.
79.00 Leave canon, bears E. N. E.
80.00 Offset from tangent to Parallel, to 103d mile temporary corner.
Surface mountainous, covered with Aspen brush. It was covered with Aspen timbers, but fire, only a shore time since destroyed it, and Aspen brush has grown up in its stead.
Soil 2nd rate.

West on 104th Mile.

Variation 13° 55' East.
38.00 Leave side of bluff, bears E. N. E.
80.00 Offset from tangent to Parallel to 104th mile temporary corner.
Surface, 1st half mountainous, covered with brush, 2nd half a high plateau covered with 2nd rate yellow pitch Pine and fir timber
Soil 3d rate
Aug. 25th. Measuring chain compared with standard, and found correct.

West on 105th Mile

Variation 13° 55' East.
19.00 Top of bluff, bears N. N. W.
25.00 Canon, 200 lks. wide, bears N. N. W.

Chains

35.00 Enter fallen Aspen timber, grown up to thick brush, bears North.
46.50 Enter 2nd rate Pine and Fir timber, bears North.
80.00 Offset from tangent to Parallel, to 105th mile, temporary corner.
Surface mountainous, covered mostly with 2nd rate Pine and Fir timber and an undergrowth of Oak and Aspen brush.
Soil 3d rate.

[fol. 420] West on 106th Mile

Variation 13° 55' East.
15.50 Canon, 200 lks. wide, bears N. N. E.
50.50 Canon, 300 lks. wide, bears S. E.
80.50 Offset from tangent to Parallel, to 106th mile, temporary corner.
Surface broken, covered with 2nd rate Pine Fir and Aspen timber.
Soil 2nd rate.

West on 107th Mile

Variation 13° 55' East.
80.50 Offset from tangent to Parallel, to 107th mile, temporary corner.
Surface broken.
Soil 1st rate.

West on 108th Mile

Variation 13° 55' East.
80.00 Offset from tangent to Parallel, to 108th mile, temporary corner.
Surface rolling, covered with 2nd rate Pine and Aspen timber and undergrowth of Oak brush.
Soil 2nd rate.

West on 109th Mile

Variation 13° 55' East.
80.00 Offset from tangent to Parallel, to 109th mile, temporary corner.
Surface rolling, covered with 2nd rate pitch Pine and Aspen timber.

Chains

Soil 2nd rate.
Aug. 26th. Measuring chain compared with standard, and found correct.

West on 110th Mile

Variation 13° 55′ East
2.50 Canon, bears S. S. W.
37.00 Prairie Valley covered with grass, bears S. S. E.
74.00 Leave 2nd rate Pine timber, bears S. S. W.
77.00 Enter low bottom, bears S. S. E.
77.90 Creek, 3 lks. wide, low banks, clear water, swift current, sandy bottom, course S. S. E.
78.50 Leave low bottom, bears S. S. E.
80.00 Offset from tangent to Parallel, to 110th mile, temporary
[fol. 421] corner.
Surface broken, covered with 2nd rate Pine and Aspen timber.
Soil 2nd rate.

West on 111th Mile

Variation 13° 55′ East.
1.50 Enter 2nd rate Pine timber, bears S. E.
80.00 Offset from tangent to Parallel, to 111th mile, temporary corner.
Surface rolling, covered with 2nd rate Pine and Aspen timber.
Soil 1st rate.

West on 112th Mile

Variation 13° 50′ East.
70.60 Canon, 500 feet deep, 250 lks. wide, bears S. S. W.
80.00 Offset from tangent to Parallel, to 112th mile temporary corner.
Surface broken
Soil 2nd rate

West on 113th Mile

Variation 13° 55′ East.
12.00 Top of mountain ridge, bears S. S. W.
34.20 Canon, 200 lks. wide, bears South
77.70 Creek, 6 lks. wide, clear water, gentle current, rocky bottom course S. S. E.

Chains

80.00 Offset from tangent to Parallel, to 113th mile, temporary corner.
Surface mountainous and stony, covered with 2nd rate Pine and Aspen timber.
Soil 3d.

West on 114th Mile

Variation 13° 55′ East.
9.50 Canon, 100 lks. wide, bears S. S. W.
47.00 Creek, 4 lks. wide, clear water, gentle current, stony bottom, course North.
72.50 Canon, 100 lks. wide, bears South.
80.00 Offset from tangent to Parallel, to 114th mile, temporary corner.
Surface mountainous and stony, covered with 2nd rate
[fol. 422] Pine and Fir timber.
Soil 3d rate.

West on 115th Mile

Variation 13° 55′ East.
19.50 Top of mountain spur, bears North.
69.00 Leave 2nd rate Pine timber and enter Prairie valley, bears North.
77.00 Creek 6 lks. wide, clear water, gentle currenty, stony bottom, course S. S. W.
80.00 Offset from tangent 9.50 chs. to Parallel to 115th mile temporary corner.
Surface broken.
Soil 3d rate.

Astronomical monument No. 4 is 8.12 chs. East and 4.50 chs. North of 115th mile corner. I therefore make a correction of 12.5 lks. per mile.
Moved temporary corner 4.50 chs. North and set true corner.
Marked stone 7x5x4 –115 M.– and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x16x10, projecting 8 in. above mound, marked on the North, South, West and East side 4C. N. M. 1868. 115 M. respectfully
No natural objects near.

Chains

East on 114th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 4.37.2 chs. North, and set true corner.
Marked stone 5x5x1 -1114 M.- and deposited in 3½ feet in earth. Built conical mound of stone and earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x20x16, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -114 M.- respectively.
No natural objects near.

East on 113th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 4.24.5 chs. North and set true corner.
[fol. 423] Marked stone 8x6x3 -113M- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -113 M.- respectively.
From which point
A Pine tree, 18 in. dia. bears S. 15 W., 56 lks. dist.
A pine tree, 18 in. dia. bears N. 7 E., 134 lks. dist.

East on 112th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 4.11.8 chs. North and set true corner.
Marked stone 9x9x4 -112 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 38x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -112 M.- respectively
From which point
A pitch pine tree, 10 in. dia. bears S. 17 W., 57 lks. dist.
A pitch Pine tree, 14 in. dia. bears N. 20 E., 42 lks. dist.

Chains

East on 111th Mile

Variation 13° 50′ East.

80.00 Moved temporary corner 3.99.1 chs. North and set true corner. Marked stone 9x6x3 -111 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x14x3, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -111 M.- respectively.
From which point
A pine tree, 30 in. dia., bears S. 4 W., 25 lks., dist.
A pine tree, 30 in. dia. bears N. 3 E., 138 lks. dist.

East on 110th Mile

Variation 13° 50′ East.

80.00 Moved temporary corner 3.86.4 chs. North and set true corner.
Marked stone 9x6x3 -110 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over
[fol. 424] same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 34x12x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -110 M.- respectively.
From which point
A pitch Pine tree, 20 in. dia., bears S. 6 W., 118 lks. dist.
A pitch Pine tree, 15 in. dia., bears N. 62 W., 213 lks. dist.

East on 109th Mile

Variation 13° 50′ East.

80.00 Moved temporary corner 3.73.6 chs. North and set true corner.
Marked stone 9x6x3 -109 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x8x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -109 M.- respectively.
From which point
A double Pine tree, 24 in. dia., bears North 130 lks. dist.
A pine tree 20 in. dia., bears S. 1¼ E., 61 lks. dist.

Chains

East on 108th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 3.60.9 chs. North and set true corner.
Marked stone 12x5x4 -108 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x 9x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -108 M.- respectively.
From which point
A pitch pine tree, 10 in. dia., bears N. 29 W., 8 lks. dist.
A pitch pine tree, 10 in. dia., bears S. 29 E., 6 lks. dist.

East on 107th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 3.48.2 chs. North and set true corner.
Marked sand stone 7x6x3 -107 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound,
[fol. 425] 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -107 M.- respectively. From which point
A double Pine tree, 24 in. dia., bears North, 130 lks. dist.
A pine tree, 20 in. dia., bears S. 17 E., 61 lks. dist.

East on 106th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 3.35.5 chs. North and set true corner.
Marked sand stone 6x6x3 -106 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16x12x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -106 M.- respectively.
From which point
A pine tree, 16 in. dia., bears S. 10 W., 115 lks. dist.
A pine tree, 14 in. dia., bears N. 12 E., 104 lks. dist.

Chains

East on 105th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 3.22.8 chs. North and set true corner.

Marked sand stone 13x5x3 -105 M.- and deposited it 31½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x9x9, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -105 M.- respectively.

From which point

A pine tree, 16 in. dia., bears N. 10 E., 69 lks. dist.

A pine tree, 18 in. dia., bears N. 14 E., 56 lks. dist.

East on 104th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 3.40.0 chs. North and set true corner.

Marked stone 10x10x3 -104 M.- and deposited it 31½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from [61. 426] base of mound, 2 feet square and 18 in. deep. Set sand stone 30x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -104 M.- respectively.

From which point

A pine tree, 14 in. dia., bears N. 45 E., 60 lks. dist.

A Fir tree, 13 in. dia., bears S. 35 W., 11 lks. dist.

East on 103d Mile

Variation 13° 50' East.

80.00 Moved temporary corner 2.97.3 chs. North and set true corner.

Marked sand stone 8x6x3 -103 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -103 M.- respectively.

From which point

A Pine tree, 20 in. dia., bears N. 10 E., 155 lks. dist.

No other trees near.

Chains

East on 102nd Mile

Variation 13° 50' East.

80.00 Moved temporary corner 2.84.6 chs: North and set true corner.
Marked sand stone 10x8x3 -102 M- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x13x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -102 M- respectively.
From which point
A Norway Pine tree, 50 in. dia., bears S. 49 W., 69 lks. dist.
A Pine tree, 28 in. dia., bears S. 49 W., 69 lks. dist.

East on 101st Mile

Variation 13° 50' East.

80.00 Moved temporary corner 2.71.9 chs. North, and set true corner.
Marked stone 12x10x4 -101 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits, 10 lks. East and West, from base of mound,
[fol. 127] 2 feet square and 18 in. deep. Set sand stone, 20x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -101 M.- respectively.
From which point
A Pine tree, 24 in. dia., bears N. 13 W., 57 lks. dist.
A Pine tree, 18 in. dia., bears S. 45 E., 60 lks. dist.

East on 100th Mile

Variation 13° 50' East.

80.00 Moved temporary corner 2.59.2 chs. North and set true corner.
Marked stone 12x20x4 -100M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -100 M.- respectively.
From which point
A Pine tree, 14 in. dia., bears S. 4 W., 14 lks. dist.
A pine tree, 18 in. dia., bears N. 8 W., 109 lks. dist.

Chains

East on 99th Mile

Variation 13° 50' East

80.00 Moved temporary corner, 2.16.4 chs. North and set true corner.
Marked stone 6x6x2 .99 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x13x6, projecting 8 in. above mound, marked on the North, South, West and East sides .C.-.N. M.-.1868-.99 M.- respectively
From which point a
Pine tree, 22 in. dia., bears S. 19 W., 28 lks. dist.
Pine tree, 22 in. dia., bears N. 9 E., 26 lks. dist.

East on 98th Mile

Variation 13° 49' East.

80.00 Moved temporary corner, 2.33.7 chs. North and set true corner.
Marked stone 10x6x3 .98 M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x5, projecting 8 in. above mound, marked on the North, South,
[fol. 428] West and East sides .C.-.N. M.-.1868-.98 M.- respectively.
From which point
A Pine tree, 13 in. dia., bears N. 18 E., 96 lks. dist.
A Pine tree, 12 in. dia., bears S. 13 W., 96 lks. dist.

East on 97th Mile

Variation 13° 49' East.

80.00 Moved temporary corner 2.21.0 chs. North and set true corner.
Marked sand stone 6x5x4 .97 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x7x7, projecting 8 in. above mound, marked on the North, South, West and East sides .C.-.N. M.-.1868-.97 M.- respectively.
From which point
A Pine tree, 16 in. dia., bears S. 27 W., 37 lks. dist.
A Pine tree, 13 in. dia., bears N. 27 E., 93 lks. dist.

Chains

East on 96th Mile

Variation 13° 48' East.

80.00 Moved temporary corner 2.08.3 Chs. North and Set true corner.
Marked sand stone 6x6x3 -96 M.- and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -96 M.- respectively.
From which point
A Pine tree, 24 in. dia., bears S. 40 W., 38 lks. dist.
A Pine tree, 18 in. dia., bears N. 65 W., 146 lks. dist.

East on 95th Mile

Variation 13° 49' East.

80.00 Moved temporary corner 1.95.6. Chs. North and set true corner.
Marked stone 6x5x3 -95 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x10x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1808- -95 M.- respectively.
From which point
[fol. 429] A Pine tree, 18 in. dia., bears S. 13 W., 111 lks. Dist.
A Pine tree, 18 in. dia., bears N. 5 W., 36 lks. dist.

East on 94th Mile

Variation 13° 49' East.

80.00 Moved temporary corner 1.82.8 Chs. North and set true corner.
Marked sand stone 7x6x3 -94 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from bas. of mound, 2 feet square and 18 in. deep. Set sand stone 24x13x6, projecting 8 inf. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -94 M.- respectively.
From which point
A Pine tree, 14 in. dia., bears S. 12 W., 112 lks. dist.
A Pine tree, 24 in. dia., bears N. 12 E., 138 lks. dist.

East on 93d Mile

Variation 13° 46' East.

80.00 Moved temporary corner 1.70.1 Chs. North and set true corner.

Chains

Marked stone 6x6x3 -93 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x14x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -93 M.- respectively
From which point
A Pine tree, 14 in. dia., bears N. 54 W., 37 lks. dist.
A Pine tree, 20 in. dia., bears S. 35 W., 63 lks. dist.

East on 92nd Mile

Variation 13° 46' East.

80.00 Moved temporary corner 1.57.4 Chs. North and set true corner.
Marked stone 8x6x3, -92 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -92 M.- respectively.
No natural objects near.

[fol. 430]

East on 91st Mile

Variation 13° 45' East.

80.00 Moved temporary corner 1.41.7 chs. North and set true corner on side hill
Marked stone 6x5x3 -91 M.- and deposited it one foot in earth. Set sand stone, 24x12x4 over same, marked on the North, South, West and East sides -C.- -N. M.- -1868- -91 M.-
No mound, no pits.
From which point
A Pine tree, 20 in. dia., bears S. 18 W., 70 lks. dist.
A Pine tree, 18 in. dia., bears N. 37 E., 50 lks. dist.

East on 90th Mile

Variation 13° 45' East.

80.00 Moved temporary corner 1.32.0 chs. North and set true corner.
Marked stone 10x8x3 -90 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound,

Chains

2 feet sqr., and 18 in. deep. Set sand stone 36x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -90 M.- respectively. From which point
A Pine tree, 20 in. dia., bears S. 48 W. 70 lks. dist.
A Pine tree, 18 in. dia., bears N. 37 E. 50 lks. dist.

East on 89th Mile

Variation 13° 45' East.

80.00 Moved temporary corner 1.19.2 chs. North and set true corner.
Marked stone 8x6x[illegible] -89 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x10x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -89 M.- respectively. No natural objects near.

East on 88th Mile

Variation 13° 45' East.

80.00 Moved temporary corner 1.06.5 chs. North and set true corner, on side of bluff.
Marked stone 5x5x4 -88 M.- and deposited it, 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of mound;
[fol. 431] 2 feet square and 18 in. deep. Set sand stone 30x8x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -88 M.- respectively. No natural objects near.

East on 87th Mile

Variation 13° 44' East.

80.00 Move temporary corner 93.8 lks. North and set true corner. Marked sand stone 13x5x3 -87 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x16x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -87 M.- respectively.

Chains

From which point
A Pine tree, 8 in. dia. bears S. 1° W. 12 lks. dist.
A Pine tree, 24 in. dia. bears N. 21 E., 191 lks. dist.

East on 86th Mile

Variation 13° 41′ East.

80.00 Moved temporary corner 84.1 lks. North and set true corner. Marked stone 6x6x4 -86 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x12x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -86 M.- respectively.
From which point
A yellow Pine tree, 16 in. dia., bears N. 58 E., 72 lks. dist.
A yellow Pine tree, 16 in. dia., bears S. 58 W., 18 lks. dist.

East on 85th Mile

Variation 13° 38′ East.

80.00 Moved temporary corner 68.4 lks. North, and set true corner.
Marked sand stone 12x6x4 -85 M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set sand stone 20x10x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -85 M.- respectively.

[fol. 432] From which point
A Pine tree, 24 in. dia. bears N. 22 E., 140 lks. dist.
A Pine tree, 14 in. dia. bears S. 26 W., 60 lks. dist.

East on 84th Mile

Variation 13° 38′ East.

80.00 Moved temporary corner 55.6 lks. North and set true corner, on side hill, facing the North.
Marked sand stone 8x6x2 -84 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 36x12x4, projecting 8 in. above mound, marked on the

Chains

North, South, West and East sides -C.- -N. M.- -1868- -84 M.- respectively.
From which point
A Pine tree, 20 in. dia., bears N. 19 E. 10 lks. dist.
A Pine tree, 14 in. dia., bears S. 13 E., 32 lks. dist.

East on 83d Mile

Variation 13° 37' East.

80.00 Moved temporary corner 42.9 lks. North and set true corner.
Marked stone 10x6x3 -83 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18x8x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -83 M.- respectively.
From which
A Pine tree, 12 in. dia., bears N. 12 W. 64 lks. dist.
A Pine tree, 14 in. dia. bears S. 12½ W. 17 lks. dist.

East on 82nd Mile

Variation 13° 33' East.

80.00 Moved temporary corner 30.2 lks. North and set true corner.
Marked stone 12x10x3 -82 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 22x8x4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -82 M.- respectively.
From which
A yellow Pine tree, 12 in. dia. bears N. 5 E., 95 lks. dist.
A yellow Pine tree, 18 in. dia. bears S. 13 W., 190 lks. dist.

[fol. 433]

East on 81st Mile

Variation 13° 35' East.

80.00 Moved temporary corner 17.5 lks. North and set true corner.
Marked stone 6x3x2 -81 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x6, projecting 8 in. above mound, marked on the North, South,

Chains

West and East sides 4 [illegible] N. M. 1868. 81 M. respectively
From which point
A white Pine tree, 18 in. dia. bears S. 10 W. 27 lks. dist.
A white Pine tree, 18 in. dia. bears N. 14 E. 96 lks. dist.

East on 80th Mile

Variation 13° 35' East.

80.00 Moved temporary corner 4.8 lks. North and set true corner. Marked stone 6x5x1 -80 M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides 4 [illegible] N. M. 1868. 80 M. respectively.
No natural objects near.

Observations for azimuth at astronomical monument No. 4 on d Ursæ Minoris. Dec. 86° 36' 42" I. RA. 18h 14'
" 51 5, and 51 Cephei Dec. 87° 14' 05" 6. RA. 6h 37'

39. Aug. 27, 1868. Chronometer fast at mean noon, on
h m s
Solar time, 5 48 20.8 with a loosing rate of 2.2s per day.

	h	m	s
Chronometer time of observation of Ursæ Minoris, upper transit	1	36	15
Chro— time of observation of 51 Cephei	1	59	17
Chronometer interval		22	32
Chronometer rate			0.3
Reduction to Sidereal time			03.7
Difference in time of upper and lower transit		22	36
[fol. 434] Difference in lower and upper Culminations as shown in Nautical Almanac		22	47.5
Difference of observed time, minus difference of right ascension			11.5

A 11'.5—1725 Log. 2.236789 Magnetic Va.
Cos d 86° 36' 42"— 8.771684 13° 50' East
Cos d 87° 14' 05"— 8.683359 Error of azi-
Sec. 37°— 0.093654 muth 3.774
Cosec 6° 89' 13"— 0.963827 —0.759307

Chains

West on 116th Mile

Variation 13° 50' East.
8.00 Indian trail, bears S. W.
50.00 Valley, bears South.
63.50 Creek, 35 lks. wide, clear water, 8 in. deep, swift current, stony bottom, course S. S. E.
80.00 Offset from tangent to Parallel, to 116th mile corner, a large sand stone boulder, 5x4x2½ feet above surface, marked on the North, South, West and East sides -C.- -N. M.- -1868- -116 M.- respectively.
From which point
A large sand stone boulder 15x10x4 feet bears N. 60 E., 42 lks. dist.
Surface broken.
Soil in valley 1st rate.
Balance 2nd rate.

West on 117th Mile

Variation 13° 50' East.
20.00 Top of mountain ridge, bears S. S. W.
42.00 Snowy Peak, bears N. 32 W.
75.75 Creek 10 lks. wide, clear water, swift current, stony bottom, course S. W.
77.10 Creek, 2 lks. wide, swift current, clear water, gravelly bottom, course S. S. W.
80.00 Offset from tangent to Parallel to 117th mile corner.
Marked sand stone 8x6x4 -117 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26x10x8, projecting 8 in. above mound, marked on
[fol. 435] the North, South, West and East sides -C.- -N. M.- -1868- -117 M.- respectively.
From which point
A pine tree, 18 in. dia. bears N. 10 E., 93 lks. dist.
A Pine tree, 20 ins. dia., bears S. 11 E., 173 lks. dist.
Surface mountainous and stony, covered with 3d rate Pine timber and an undergrowth of Oak and Aspen brush.
Soil 3d rate

West on 118th Mile

Variation 12° to 15° East.
18.25 Creek, 40 lks. wide, clear water, about 8 in. deep, rapid current, gravelly and stony bottom, course E. S. E.

Chains

32.50 Canon, 2 chs. wide, bears N. E. A creek about 6 feet North of line.

41.00 Creek in deep canon, 5 lks. wide, rapid current, course E. N. E.

80.00 Offset from tangent to Parallel, to 118th mile corner.
Marked stone 11x6x3 and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x12x7 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -118 M.- respectively.
No natural objects near.
General surface mountainous, covered with 2nd rate Pine timber and brush.
Soil 1st and 2nd.
Aug. 28th. Measuring chain compared with standard and found correct.

West on 119th Mile

Variation 13° to 15° 30′ East.

15.00 Top of ridge, bears S. 10 E.

51.00 Enter marsh, bears S. W.

66.00 Creek, 3 lks. wide, clear water, rapid current, course N. N. W.

80.00 Offset from tangent to Parallel, to 119th mile corner in thick fallen timber.
Deposited charred block 6x6x4—3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, three feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -119 M.- respectively.
[fol. 436]
No natural objects near.
Surface broken, covered with thick fallen timber and an undergrowth of Aspen, Fir and Pine brush.
Soil 3d rate.

West on 120th Mile

Variation 13° 55′ East.

40.00 Top of ridge, bears S. S. W.

56.00 Leave fallen timber and enter Prairie, bears S. S. E.

79.50 Enter young growth of Pine and Fir timber, bears S. W.

Chains

80.00 Offset from tangent to Parallel to 120th mile corner, in small grove. Marked stone 8x6x4 -120 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x14x, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -120 M.- respectively.
From which point
A fir tree, 18 in. dia., bears S. 2° E., 15 lks. dist.
A fir tree, 8 in. dia., bears N. 8 E., 68 lks. dist.
Surface broken, 1st 56 chs. covered with fallen timber and small aspen and fir timber, balance open prairie.
Soil 2nd rate.

West on 121st Mile

Variation 13° 50′ East.
1.00 Leave small grove of timber, bears S. E., and enter prairie valley.
80.00 Offset from tangent to Parallel to 121st mile corner. Marked stone 10x4x4 -121 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x17x10, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -121 M.- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 2nd rate.

West on 122nd Mile

Variation 13° 55′ East.
25.00 Enter slough, covered with willow brush bears South.
33.50 Leave slough, bears S. W.
80.00 Offset from tangent to Parallel, to 122nd mile corner.
[fol. 437] Marked stone 10x7x3 -122 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set iron stone 36x15x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -122 M.- respectively.
No natural objects near.
Surface Prairie, gradually descending to the South and West.
Soil 1st rate.

Chains

West on 123d Mile

Variation 13° 50′ East.

6.50 Indian trail, bears N. W.

11.80 Creek, 8 lks. wide, clear water, rapid current, stony bottom, course S. E.

20.00 Enter scattering 2nd rate Pine and Aspen timber, bears North and South.

80.00 Offset from tangent to Parallel, to 123d mile corner.
Deposited charred block, 10x6x4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -123 M.- respectively.
No natural objects near.
Surface mountainous, covered with Aspen and Pine brush.
Soil 2nd rate.
Aug. 29th. Measuring chain compared with standard and found correct.

West on 124th Mile

Variation 13° 50′ East.

80.00 Place for 124th mile corner on side of mountain.
Impossible to establish it.
Surface mountainous, covered with stone.
Soil 3d rate.

West on 125th Mile

[fol. 438] Variation 13° 50′ East.

4.00 Foot of snowy mountain ridge, bears South.

52.00 Summit of snowy mountain ridge, bears S. S. E.

55.00 Built conical witness mound of stone 4 feet high, set sand stone 20x10x8, marked on the North -C.- South -N. M.- West -1868-.

80.00 Offset from tangent to Parallel to 125th mile corner. Deposited stone 10x6x4 -125 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set quartz stone 23x12x8, projecting 8 in° above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -125 M.- respectively.
No natural objects near.

Chains

Surface mountainous and stony, with some prairie land
Soil 3d rate.

West on 126th Mile

Variation 13° 50′ East.

10.00 Enter 2nd rate pinon, pine timber, bears N. and S.

23.50 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course S. S. W.

30.00 Leave timber, bears W. N. W.

80.00 Offset from tangent to Parallel, to 126th mile corner.
Marked stone 10x6x3 -126 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set quartz stone 20x12x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -126 M.- *respectfully*.
No natural objects near.
Surface broken, covered with stone and sand quartz.
Soil 3d rate.

West on 127th Mile

Variation 13° 50′ East.

64.00 Creek, in canon, 1,000 feet deep.

80.00 Place for 127th mile corner, on side of cliff, impossible to establish corner.
Surface mountainous and stony, mostly sand stone quartz.
Soil 3d rate.
Aug. 30th. Measuring chain compared with standard and found correct.

[fol. 439] West on 128th Mile

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel, to 128th mile corner.
Marked stone 10x6x3 -128 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x12x8 projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -128 M.- respectively.
No natural objects near.
Surface mountainous and stony, covered with aspen and Pine brush.
Soil 3d rate.

Chains

West on 129th Mile

Variation 13° 50′ East.
50.00 Foot of mountain, ridge bears N. W.
80.00 Offset from tangent to Parallel, to 129th mile corner. Marked stone, 0x6x5 -129 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x8x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -129 M.- respectively.
From which point
A Pine tree, 24 in. dia. bears S. 72 E., 51 lks. dist.
A Pine tree, 24 in. dia. bears N. 60 W., 35 lks. dist.
Surface mountainous and stony
Soil 3d rate.

West on 130th Mile

Variation 13° 50′ East.
45.00 Leave timber, and enter sage brush, Prairie bears North.
79.50 Enter canon, bears N. W.
80.00 Offset from tangent to Parallel, to 130th mile corner. Marked stone 10x6x4, -130 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone, 30x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -130 M.- respectively.
[fol. 440] From which
A Pine tree, 30 in. dia. bears S. 35 E., 184 lks. dist.
No other tree near.
Surface rolling.
Soil 3d rate.

West on 131st Mile

Variation 13° 50′ East.
1.50 Leave canon, bears N. W.
30.00 Enter pinon Pine and volcanic stone region.
51.40 Leave same and enter valley, bears N. and S.
73.00 Creek, 4 lks. wide, stony bottom, course N. N. W.

Chains

80.00 Offset from tangent to Parallel, to 131st mile corner, on bank of creek, 4 lks. wide, clear water, gentle current, sandy bottom, course N. N. W. Marked stone 6x4x3 -131 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set granite stone 20x10x8 projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -131 M.- respectively.
No natural objects near.
Surface rolling.
Soil 3d rate.

West on 132nd Mile

Variation 13° 50′ East.

5.00 Creek, 10 lks. wide, low banks, clear water, swift current, stony bottom, course North.
An old cabin about 3 chs. North.

80.00 Offset from tangent to Parallel to 132nd mile corner.
Marked volcanic stone 12x6x4 -132 M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set pitch Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C. -N. M.- -1868- -132 M.- respectively.
No natural objects near.
Surface, gradual descent to West and N. W.
Soil 3d rate, covered with gravel, washed from the mountains and sage brush.

[fol. 441] West on 133d Mile

Variation 11° 50′ East.

67.00 Top of volcanic hill, covered with stone.
Variation 18° East.

80.00 Offset from tangent to Parallel, to 133d mile corner.
Marked stone 12 x 6 x 4 -133 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24 x 8 x 7, projecting 8 ins. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -133 M.- respectively.
From which point a

Chains

Snow peak, bears S. 15° W.
Conical Peak, in valley, bears S. 72 W
Conical Peak, in mountains, bears N. 67 E.
Surface gently rolling.
Soil 2nd rate.
Aug. 31st. Measuring chain compared with standard and found correct.

West on 134th Mile

Variation (at corner) 12° East.
Variation 11 chs. West 13° East.
20 chs. West 13° 50′ East.

77.50 Road leading to deserted cabins near base of mountains, bears S. W.

80.00 Offset from tangent to Parallel, to 134th mile corner. Marked stone 10 x 6 x 3 -134 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -134 M- respectively.
No natural objects near.
Surface gently rolling, covered with sage brush.
Soil 2nd rate.

West on 135th Mile

Variation 13° 50′ East.

41.00 Road bears S. W.

80.00 Offset from tangent to Parallel to 135th mile corner. Marked stone 6 x 4 x 3 -135 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over
(fol. 442) same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -135 M- respectively.
No natural objects near.
Surface gently rolling.
Soil 3d rate.

West on 136th Mile

Variation 13° 50′ East.

9.00 Road from San Francisco Col. to La Costilla, N. M. bears W. S. W.

Chains

30.00 Enter pinion Pine timber, bears S. S. W.
38.00 Top of ridge, covered with volcanic stone.
45.00 Leave scattering pinon Pine timber, bears S. S. W.
52.00 Road from San Francisco, Cal. to San Costiall, N. M. bears W. N. W.
52.60 Enter scattering pinion Pine timber, bears W. N. W.
80.00 Offset from tangent to Parallel to 136th mile corner. Marked volcanic stone 8 x 6 x 4 -136 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30 x 16 x 12, projecting 8 in. above mound, marked on the North, South, West and East Sides -C.- -N. M.- -1868- -136M- respectively.
No natural objects near.
Surface broken. The last 50 chs. mostly covered with pinon, Pine timber and volcanic stone.
Soil 3d rate.

West on 137th Mile

Variation 13° 50' East.
12.00 Leave scattering pinon Pine timber and enter valley, bear North.
47.00 American flag in front of Meyer & Co.'s store and P. O. in centre of village of La Costilla, N. M., bears S. 52 W.
52.50 Canal for irrigation, course N. W.
63.25 Canal for irrigation, course N. W.
80.00 Offset from tangent to Parallel, to 137th mile corner. Marked volcanic stone 7 x 6 x 3 -137 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East & West from base
[fol. 443] of mound, 2 feet square and 18 in. deep. Set volcanic stone 24 x 8 x 8, projecting 8 in. above mound, marked on the North, South West and East sides -C.- -N. M.- -1868- -137 M.- respectively.
No natural objects near.
Surface level valley, covered with sage brush.
Soil 2nd rate.

West on 138th Mile

Variation 13° 50' East.
18.00 Canal for irrigation, course N. N. W.
47.50 Road from La Costilla, N. M. to Fort Garland, Col., bears North. Baldy mountain near Fort Garland bears N. 4 E. American flag in front Meyer & Co.'s store and P. O. in centre of Village of La Costilla, N. M. bears S. 2 W.

Chains

56.50 Canal for irrigation, course North.
58.70 Canal for irrigation, course North.
62.00 Rio Costilla, 75 lks. wide, clear water, rapid current, stony bottom, course N. 10 W.
63.75 Road, bears North.
74.50 Road from La Costilla to Conejos, Col., bears N. N. W.
80.00 Offset from tangent to Parallel to 138th mile corner.
Marked stone 10 x 6 x 4 -138 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26 x 18 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.-N. M.- -1868- -138 M.- respectively.
No natural objects near.
Surface level, covered with sage brush and various kinds of cactus.
Soil 3d rate.
Note: The village of La Costilla, N. M. at this point, is divided by the line, leaving nearly ¾ of it in N. M.

West on 139th Mile

Variation 13° 50′ East.
79.50 Road leading to base of Ute Mountain, bears W. S. W.
80.00 Offset from tangent to Parallel to 139th mile corner on N. W. side of road. Marked stone 10 x 6 x 4 -139th M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and
[fol. 144] West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30 x 14 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -139 M.- respectively.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate and gravelly.
Sept. 1st. Measuring chain compared with standard and found correct.

West on 140th Mile

Variation 13° 50′ East.
80.00 Offset from tangent to Parallel to 140th mile corner.
Marked stone 6 x 6 x 4 -140 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set volcanic stone 20 x 8 x 8 projecting 6 in. above mound, marked on the North, South,

Chains

West and East sides -C.- -N. M.- -1868- -140 M.- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil gravelly, 3d rate.

West on 141st Mile

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel, to 141st mile corner.
Marked stone 8 x 6 x 4 -141 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24 x 16 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -141 M.- respectively.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

West on 142nd Mile

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel to 142nd mile corner.
Marked stone 6 x 6 x 4 -142 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound,
[fol. 445] 2 feet square and 18 in. deep. Set volcanic stone 24 x 10 x 6 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -142 M.- respectively.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate and gravelly.

West on 143d Mile

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel to 143 mile corner.
Marked stone 5x4x3 -143 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -143 M.- respectfully.

Chains

No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

West on 144th Mile

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 144th mile corner.
Marked stone 6x4x3 -144 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound 2 feet square and 18 in. deep. Set volcanic stone 24x10x10 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -144 M.- respectfully.
No natural objects near.
Surface level, covered with sage brush and cactus.
Soil 3d rate, gravelly.

West on 145th Mile

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 145th mile corner.
Marked stone 6x5x3, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 ft. square and 18 in. deep. Set volcanic stone 26x13x7, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -145 M.- respectfully.
[fol 146] No natural objects near.
Surface level, covered with sun flowers and cactus.
Soil 2nd rate.

West on 146th Mile

Variation 13° 50' East.

80.00 Offset from tangent to Parallel to 146th mile corner.
Marked stone 6x4x3 -146 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -146 M.- respectfully.
From which point
Ute mountain, bears South.
Baldy mountain, near Fort Garland, bears N. 14½ E.

Chains

Two mountain Peaks, down valley connected by a ridge East, bears S. 41 W.
Mountain ridge, bears S. 64 W. about 20 miles dist.
Mountain Peak, bears S. 64 E.
Mountain Peak, bears S. 32½ E.
Surface level, covered with sage brush
Soil 3rd rate.

West on 147th Mile

Variation 13° 50′ East.

51.00 Bend in creek, 50 lks. wide, clear water, rapid current, gravelly bottom, course W. S. W. and W. N. W.

59.00 Rio Costilla, 100 lks. wide, low banks, clear water, rapid current, gravelly bottom, course S. S. W.

80.00 Offset from tangent to Parallel to 147th mile corner Marked stone 6x4x3 -147 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same.
Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x12x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.-N. M.- -1868- -147 M.- respectfully.
No natural objects near.
Surface nearly level.
Soil 3rd rate, gravelly.

West on 148th Mile

Variation 13° 45′ East.

70.15 [fol. 447] Offset from tangent to Parallel, S. 27.3 lks. North to Astronomical Monument No. 5, which is represented by a volcanic cobble stone mound, 8 feet at base, 4½ feet high, and 3½ feet at top. Set volcanic stone 36x12x12, marked on the North "Colorado" South "New Mexico" East "37 N. L." West "1868" on bank of Rio Grande.
Sept. 2nd. Measuring chain compared with standard and found correct.

Observations for Azimuth at Astronomical Monument No. 5, on d Ursae Minoris Dec. 86° 36′ 43″, R. A. 18.h 14.m 54.s, and 51 Cephei Dec. 87° 14′ 04″.1, R. A. 6.h 37.m 43.8s Sept. 5th, 1868. Chronometer fast at mean noon, on Solar time 5.h 49.m 34.s, with a loosing rate of 15s per day.

Chains

	d	h	m	s
Chronometer time of observation of Ursae Minoris, upper transit		10	03	60
Chro. time of observations of 51 Cephei		10	25	44
Chronometer interval			22	44
Chronometer rate				0 25
Reduction to Sidereal time				3 61
Difference in time of upper and lower transit			22	47 86
Difference in time of upper and lower culminations as shown in Nautical Almanac			22	52
Difference of observed time, minus difference of right ascension				4 14

Computations

$\Delta = 4\ 14^s = 62.1^s$ Log =	1.79309
Cos. d 86° 36′ 43″ =	8.77306
Cos. d 87° 14′ 04″ =	8.68366
Sec. c 37 Log. =	0.09765
Cosec 6 09.13 =	0.96982
Error of azimuth 2 07″ =	0.31722

West on 148th Mile

Variation 2° East

West from Astronomical Monument No. 5 which is 70.15 chs. West from 147th mile corner.

1.75 Rio Grande, course S. E., general course S. S. E. It flows through a most regular perpendicular canon, composed of [fol. 448] volcanic rock 70 feet below the common level of the country. It retains the sameness of width and depth for many miles and nothing whatever indicates its existence, until arriving at its edge, the deep abyss below is first discovered. It has a swift current, about 6 miles per hour, clear water rocky bottom and its average depth, about 5 feet.

3.5 Place for 148th mile corner in river and impossible to establish it.

Surface level.

Soil 3rd rate.

Chains

West on 149th Mile

Variation

From a point on West bank of Rio Grande on line 1 formed a right angle triangle A B C, measured angles A = 90 B 66° 35', hence the angle C = 23° 25', measured side A B = 5 chs.

Point C Astronomical Monument

Sin 23° 25' =		9.599244
Sin 66° 35' =		9.962672
Log 5 chs =		0.698970
	11.545 chs	1.0662398

Therefore 1 79½ lks. over Rio Grande.

Variation at this point 2° East, at a point 5 chs. South 20° East.

80.00 Offset from tangent to Parallel to 149th mile corner.

Marked volcanic stone 8x7x4 -149 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -149 M.- respectfully.

No natural objects near.

Surface gently rolling, covered with volcanic stone.

Soil 2nd rate.

West on 150th Mile

Variation (at corner) 12° 50' East.

80.00 Offset from tangent to Parallel, to 150th mile corner.

Marked stone 6x6x6 -150 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over

[fol 449] same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 22x8x8 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -150 M.- respectfully.

Variation changes from 12° 50' to 14° East.

Surface gently rolling, covered with volcanic stone and gravel.

Soil 3d rate.

Sept. 6th. Measuring chain compared with standard and found correct.

Chains

West on 151st Mile

Variation 13° 30' East.

80.00 Offset from tangent to Parallel, to 151st mile corner.
Marked stone 8x6x4 -151 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -151 M.- respectively.
Va. changeable, on line.
From which
A conical mound bears N. 35 E., 40 chs. dist
Ute Mountain, bears S. 52 E.
Conical Peak, bears S. 4 E.
High point on mountain ridge bears S. 12 E. 18 miles dist
Mountain ridge, bears S. 5 W.
Conical Peak, bears S. 15 W.
Conical Peak, on mountain ridge bears S. 22 W., 30 miles dist.
Surface gently rolling, covered with volcanic stone and gravel.
Soil 3d rate.

West on 152nd Mile

Variation 12° East.

60.00 Foot of mountain ridge, 800 feet high, bears S. S. E.

80.00 Offset from tangent to Parallel, to 152nd mile corner, on top of mountain ridge.
Marked volcanic stone 10x6x4 -152 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set volcanic
[fol. 450] stone 36x14x8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -152 M.- respectively.
No natural objects near.
Variation 12° East.
Surface except mountain ridge rolling, covered with volcanic stone.
Soil 3d rate.

West on 153d Mile

Variation 12° East.

30.00 Leave mountain ridge and enter valley, bears N. W.

80.00 Offset from tangent to Parallel to 153d mile corner.

Chains

Marked stone 8x6x4, -153 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18x10x4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -153 M.- respectively.
No natural objects near.
Surface except ridge, gently rolling.
Soil 2nd rate.

West on 154th Mile

Variation 13° East.

80.00 Offset from tangent to Parallel to 154th mile corner.
Marked stone 8x8x3 -154 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set volcanic stone 30x12x6; projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -154 M.- respectively.
No natural objects near.
Surface gently rolling prairie covered with stone.
Soil 3d rate.
Sept. 7th. Measuring chain compared with standard and found correct.

West on 155th Mile

Variation 12° 50′ East.

80.00 Offset from tangent to Parallel, to 155th mile corner.
Marked stone 6x6x4 -155 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound,
[fol. 451] 2 feet square and 18 in. deep. Set volcanic stone 48x13x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -155 M.- respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and volcanic stone.
Soil 3d rate.

West on 156th Mile

Variation 13° 20′ East.

80.00 Offset from tangent to Parallel to 156th mile corner.
Marked stone 10x10x6 -156 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 16x8x8, projecting 6 in. above mound, marked on the North, South,

Chains

West and East sides -C.- -N. M.- -1868- -156 M.- respectively
No natural objects near.
Surface gently rolling, covered with sage brush and volcanic stone.
Soil 3d rate.

West on 157th Mile

Variation 13° 50′ East.

80.00 Offset from tangent to Parallel to 157th mile corner.
Marked stone 8x6x4 -157 M.- and deposited it, 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -157 M.- respectively.
No natural objects near.
Surface gently rolling, covered with volcanic gravel; sage brush and weeds.
Soil 3d rate.

West on 158th Mile

Variation 13° 20′ East.

41.00 A stone mound, about 4 feet at base and 2½ feet high, bears South 475 lks. No marks discovered on it, and supposed to have been placed there by some former surveying party.

80.00 Offset from tangent to Parallel to 158th mile corner.
[fol. 452] Marked stone 8x6x4 -158 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -158 M.- respectively.
No natural objects near.
Surface gently rolling, covered with volcanic gravel and stone.
Soil 3d rate.
Sept. 8th. Measuring chain compared with standard and found correct.

West on 159th Mile

Variation 13° 20′ East.

80.00 Offset from tangent to Parallel, to 159th mile corner.
Marked stone 5x5x4, and deposited it 3½ feet in earth.

Chains

Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28x14x6 projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -159 M.- respectively.
From which point a
Mound, bears N. 9 E., 2 miles distant.
Point of mountain ridge, bears N. 17 E., 8 m. dist.
Point of mountain ridge, near Rio Grand bears N. 67 E., 11 miles dist.
Ute mountain, bears S. 75 E.
Conical Peak on San Antonio Mountain bears S. 30 W.
Mountain Peak, bears N. 70 W., 14 miles dist.
Surface gently rolling, covered with stone, sage brush and weeds.
Soil 3d rate.

West on 160th Mile

Variation 13° 40′ East.

80.00 Offset from tangent to Parallel to 160th mile corner.
Marked stone 10x6x3 -160 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone, 24x12x6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -160 M.- respectively.
No natural objects near.
[fol. 453] Surface gently rolling.
Soil 3d rate.

West on 161st Mile

Variation 13° 40′ East.

80.00 Offset from tangent to Parallel, to 161st mile corner.
Marked stone 12 x 6 x 6 161M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24 x 12 x 8. projecting 8 in. above amound, marked on the North, South, West and East sides C. N. M. 1868 161M. respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 3d rate.

Chains

West on 162nd Mile

Variation 13° 40′ East.

39.40 Road leading from Conejos, Col., to Santa Fe, N. M. bears North and South. Built witness mound of earth, and set volcanic stone 18 x 12 x 4, marked on the North C. South N. M. West 1868. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.

80.00 Offset from tangent to Parallel, to 162nd mile corner. Marked stone 8 x 6 x 4 162M. and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20 x 12 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 162M. respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and weeds.
Soil 3rd rate.

West on 163d Mile

Variation 13° 40′ East.

74.75 A mound bears S. 8 E.
A mound, bears S. 10 E.

80.00 Offset from tangent to Parallel, to 163d mile, corner. Marked stone 10 x 6 x 4 and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20 x 16 x 4, projecting 6 in. above mound, marked on the North, South, [fol. 454] West and East sides C. N. M. 1868 163M. respectively.
No natural objects near.
Surface gently rolling, covered with sage brush and weeds.
Soil 3d rate.

West on 164th Mile

Variation 13° 40′ East.

65.40 Road bears North and South. Built witness mound of earth, 4 feet high. Set volcanic stone 14 x 6 x 5, projecting 6 in. above mound, marked on the North, South and West sides C. N. M. 1868 respectfully.

80.00 Offset from tangent to Parallel to 164th mile corner. marked stone 6 x 6 x 3 164M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 16 x 8 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 164M. respectively.

Chains

No natural objects near.
Surface gently rolling prairie.
Soil 3d rate.

West on 165th Mile

Variation 13° 20′ East.
39.50 Road bears N. W. and S. E.
73.80 Top of bluff, bears N. N. E.
76.00 Canon, bears North.
79.50 Leave canon, bears North.
80.00 Offset from tangent to Parallel to 165th mile corner, on side of hill.
Marked stone 6 x 6 x 3 165M. and deposited it 3½ feet in earth. Built conical mound of stone 4 feet high, over same. Dug pits 10 lks. East and West from base of mounds, 2 feet square and 18 in. deep. Set volcanic stone 20 x 8 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 165M. respectively.
No natural objects near.
Surface gently rolling, covered with volcanic stone, sage brush and weeds.
Soil 3d rate.
Sept. 9th. Measuring chain compared with standard and found correct.

[fol. 455] West on 166th Mile

Variation 13° 20′ East.
3.50 Top of hill, Village of San Antonio, bears N. 18 E.
37.50 Top of bluff, 300 feet high, bears N. 30 E.
Variation 13° 20′ East.
San Antonio Village, bears N. 13 E. and N. 32 W.
San Antonio Peak bears S. 8 E.
Mountain peak, bears S. 8 W. S. 12 W. N. 55 W.
Mountain Peak bears N. 6 E.
41.50 Base of bluff, a creek, 90 lks. wide, clear water, 6 in. deep, rapid current, gravelly bottom, course North.
42.50 Enter bottom, covered with willow brush and scattering cottonwood trees, bears S. S. E. An old sheep corral just south of line.
Variation (in bottom) 13° 51′ East.
43.00 Rio San Antonio, 50 lks. wide, clear water, rapid current, stony bottom, course North.
80.00 Offset from tangent to Parallel to 166th mile corner, in bottom.

Chains

Marked stone 6 x 6 x 3 166M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 166M. respectively. From which

A cottonwood tree, 14 in. dia., bears S. 40 E., 105 lks. dist.
No other tree near.
Soil in valley 1st rate.
Surface except ridge, level.

West on 167th Mile

Variation 13° 50′ East.

30.00 Rio los Pinos, 70 lks. wide, clear water, 20 in. deep, swift current, stony bottom, course E. N. E.
Leave willow brush and cottonwood timber.

50.00 Canal for irrigation, 10 lks. wide, now dry.

54.50 Canal for irrigation, 15 lks. wide, and enter recently cultivated fields bearing North.

80.00 Offset from tangent to Parallel, to 167th mile corner.
Marked stone 6 x 4 x 3 167M. and deposited it, 3½ feet in earth. Built mound conical of earth, 4 feet high, over [fol. 156] same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone, 24 x 12 x 10, projecting 8 in. above mound, market on the North, South, West and East sides C. N. M. 1868 167M. respectively.
No natural objects near.
Surface level bottom.
Soil 1st rate.

West on 168th Mile

Variation 13° 50′ East.

0.50 Leave field, bears N. W.

33.00 Leave bottom, bears S. W. and North.

43.00 Top of bluff, 350 feet high, 25 feet from summit, it becomes perpendicular, covered with volcanic rock, bears S. W. and North.
Village of San Antonio, bears S. 60 E.
Variation 10° East.
2 chs. West 13° East.

56.00 Wood road, bears N. W.

62.50 Enter scattering pinion Pine timber, bears N. W.

80.00 Offset from tangent to Parallel, to 168th mile corner.

Chains

Marked stone 7 x 6 x 4 -168 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 14 x 8 x 6, projecting 6 in. above mound, marked on the North, South West and East sides -C- N. M. - -1868- -168 M.- respectively.
No natural objects near.
Surface level (except bluff), covered with volcanic stone and sage brush and for 15 chs. 3d rate, pinion Pine timber.
Soil 3d. rate.

West on 169th Mile

Variation 13° 55′ East.

10.00 Top of bluff, bears E. N. E.
30.00 Leave Pine timber, bears E. N. E.
57.00 Enter 3d. rate scrub pinion Pine timber, bears W. N. W
68.00 Leave same and enter sage brush Prairie, bears W. N. W
80.00 Offset from tangent to Parallel, to 169th mile corner.
Marked stone 10 x 6 x 4 -168 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30 x 14 x 5, projecting 8 in. above mound, marked on the North,
[fol. 457] South, West and East sides -C- -N. M.- -1868- -169 M.- respectively.
No natural objects near.
Surface rolling and stony.
Soil 3d. rate.
Sept. 10th. Measuring chain compared with standard and found correct.

West on 170th Mile

Variation 13° 50′ East.

64.50 Dry bed of creek, 10 lks. wide, stony bottom, course N. E.
80.00 Offset from tangent to Parallel to 170th mile corner.
Marked stone 4 x 4 x 3 -170 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 20 x 10 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -170 M.- respectively.
No natural objects near.
Surface broken, covered with stone and sage brush.
Soil 3d rate.

Chains

West on 171st Mile

Variation 13° 50' East
59.50 Canon, 100 lks. wide, bears N. E.
80.00 Offset from tangent to Parallel, to 171st mile corner
Marked stone 6 x 6 x 4 -171 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 26 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -171 M.- respectively.
No natural objects near.
Surface rolling Prairie.
Soil 2nd rate.

West on 172nd Mile

Variation 13° 50' East.
52.00 Enter 2nd rate Pine timber, bears N. E.
55.25 Road, bears E. N. E.
70.00 Leave timber, bears S. E.
80.00 Offset from tangent to Parallel to 172nd mile corner, in trail which bears W. N. W.
Marked stone 5 x 5 x 4 -172 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over
[fol 458] same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 28 x 9 x 5, projecting 8 in. above mound, marked on the North South, West and East sides -C- -N. M.- -1868- -172 M.- respectively.
No natural objects near.
Surface broken Prairie.
Soil 2nd rate.

West on 173d Mile.

Variation 13° 50' East.
37.00 Enter scattering 2nd rate Pine timber, bears North
42.00 Indian trail, bears S. W.
38.79 Volcanic stone boulder 10 x 6 x 4 feet, about 2 feet south of line.
80.00 Offset from tangent to Parallel to 173d mile corner
Marked stone 7 x 6 x 4 -173 M.- and deposited it 2½ feet in earth. Built conical mound of earth, 8 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 13 x 10 x 4, projecting 6 in. above mound, marked on the North.

Chalas

South, West and East sides -C- -N. M.- -1868- -173 M.- respectively.
No natural objects near.
Surface broken Prairie.
Soil 2nd rate.
Sept. 11th. Measuring chain compared with standard and founds correct.

West on 174th Mile

Variation 13° 50′ East.
37.00 Enter 2nd rate Pine timber, bears S. W.
53.80 Indian trail, bears N. N. W.
54.00 Dry bed of creek, course N. N. W.
80.00 Offset from tangent to Parallel, to 174th mile corner.
Marked stone 12 x 7 x 3 -174 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 15 x 12 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -174 M.- respectively.
From which point a
Norway Pine tree 18 in. dia. bears S. 20 W. 78 lks. dist.
Yellow Pine tree, 12 in. dia., bears N. 68 E. 31 lks. dist.
Surface broken, last half covered with 2nd rate Pine timber.
Soil 2nd rate.

[fol. 459]

West on 175th Mile

Variation 13° 51′ East.
28.50 Canon, 200 lks. wide, bears N. N. E.
64.50 Canon, 150 lks. wide, bears North
80.00 Offset from tangent to Parallel to 175th mile corner, which is a pine tree, 8 in. dia. Bark removed, squared, etc., marked on the North, South, West and East sides -C- -N. M.- -1868- -175 M.- respectively.
From which point
A pine tree, 24 in. dia., bears N. 63 W., 41 lks. dist.
A pinion Pine tree, 10 in. dia., bears S. 55 W., 31 lks. dist.
Surface broken, covered with 2nd rate Pine timber and an undergrowth of Pine and aspen brush.
Soil 2nd rate.

Chains

West on 176th Mile

Variation 13° 52' East.

38.00 Leave Pine and Aspen timber and enter Prairie bears South and N. W.

53.00 Enter 2nd rate Pine and Fir timber, bears N. E. and S. S. W.

80.00 Offset from tangent to Parallel, to 176th mile corner. Marked stone 13 x 6 x 4 -176 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 16 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -176 M.- respectively.

From which point

A pine tree, 24 in. dia. bears S. 68 W., 72 lks. dist.

A Fir tree, 12 in. dia., bears N. 75 E., 31 lks. dist.

Surface broken, covered with 2nd rate Pine and Fir timber.

Soil 2nd rate.

Sept. 12th. Measuring chain compared with standard and found correct.

West on 177th Mile

Variation 13° 52' East.

49.00 Leave Pine, Aspen and Fir timber, bears W. S. W.

73.50 Enter Pine, Aspen and Fir timber, bears N. and S.

80.00 Offset from tangent to Parallel, to 177th mile corner. Marked stone 8 x 6 x 3 -177 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of [fol. 460] mound, 2 feet square and 18 in. deep. Set sand stone 22 x 12 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -177 M.- respectively.

From which point

A Fir tree, 20 in. dia., bears N. 13 W., 28 lks. dist.

A Fir tree, 18 in. dia., bears S. 5 E., 47 lks. dist.

Surface broken, covered with 2nd rate Pine and Aspen and Fir timber.

Soil 2nd rate.

West on 178th Mile

Variation 13° 52' East.

80.00 Offset from tangent to Parallel, to 178th mile corner.

Chains

Marked stone 10 x 6 x 4 -178 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16 x 14 x 8, pt jecting 6 in. above mound, marked on the North, South, West and East sides -C.- -X. M.- -1868- -178 M.- respectively.

No natural objects near

Surface rolling, covered with fallen timber, destroyed about 6 years previous.

Soil 2nd rate.

West on 179th Mile

Variation 13° 52' East.

69.00 Top of bluff, descending along side of same.

80.00 Offset from tangent to Parallel to 179th mile corner.

Marked stone 6 x 4 x 3 -179 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 30 x 20 x 16, projecting 8 in. above mound marked on the North, South, West and East sides -C.- -X.- M.- -1868- -179 M.- respectively.

From which

A Pine tree, 14 in. dia., bears S. 13 E., 34 lks. dist.

A Fir tree, 18 in. dia., bears N. 3 E., 24 lks. dist.

Surface broken

Soil 3d rate

West on 180th Mile

Variation 12° East

42.50 Enter valley, bears S. W.

50.50 Creek, 20 lks. wide, clear but shallow water, rapid current,

[fol. 461] stony bottom, course S. E.

61.75 A large perpendicular volcanic stone, 175 feet high, about 50 feet at base, 3 chs. dist.

70.00 Large volcanic bould[illegible] running to a peak, 15 feet high, and 20 feet at base.

Variation 15° 30' East.

78.00 Top of bluff, bears North and S. E.

80.00 Offset from tangent to Parallel to 180th mile corner.

Marked stone 6 & 6 x 4 -180 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 8 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- X. M.- -1868- -180 M.- *respectfully*.

Chains

No natural objects near.
Surface mountainous, covered with fallen timber and an undergrowth of small aspen timber.
Soil 3d rate.

West on 181st Mile

Variation 15° East.

72.80 Top of perpendicular cliff, about 30 feet high, bears S. E.
Variation (on mountain side) 12° East.

80.00 Place for 181st mile corner, impossible to establish it.
Surface broken, covered with fallen and an undergrowth of *aspen* timber.
Soil 3d rate.
Sept. 13th. Measuring chain compared with standard and found correct.

West on 182nd Mile

Variation 15° East.

1.00 To perpendicular cliff, 100 feet high. To avoid cliff and perpendicular bluff, I offset South 4 chs.; then West 20 chs., then offset back to line.

20.00 Leave 2nd rate Pine, Fir and Aspen timber, bears N. W.

40.50 Rio los Pinos, 60 lks. wide, clear water, 12 in. deep, rapid current, stony bottom, course S. S. E.

48.70 To astronomical monument No. 6 which is represented by a sand stone, 5 feet long, 20 in. wide and 10 in. thick, set 2 feet in earth, marked on the North, South, West and East sides "Colorado," "New Mexico," "1868," "37 N. L.," *respectfully*. Built mound of cobble stone, 6 feet at base,
[fol. 462] 3 feet high and 4½ feet at top. Dug pits on the North, South, East and West sides.
Observations for Asimuth, at Astronomical Monument No. 6, on d Ursae Minoris, Dec. 86° 36' 44" .1 L. A. 18h. 14m. 49.46s., and 51 Cephei Dec. 89° 14' 33" .5 Sept. 15th, 1868.
Chronometer fast a mean noon, on Solar time 7 h 49 m 26 s. with a losing rate of 16 s. per day.

	h	m	s
Chronometer time of observations of d Ursae Minoris, upper transit	12	22	00
Chro. time of observations 51 Cephei	12	41	36
Chronometer interval		22	36 s
Chronometer rate			0.27
Reduction to Sidereal time			3.73
Sidereal interval	22	40	00
Interval between upper and lower transit	22	36	5

3.5

Chains

Computation—

Δ 3s. 5° = 52.″ 5

Cos. d. 86° 36′ 44″	8.77300
Cos. d. 87° 14′ 33″	8.68366
Sec. ϕ 37°	0.09165
Cosec. 6° 09′ 13″	0.96982
1.74	0.24429

West from Astronomical Monument No. 6 on 182nd Mile

Variation 15° East.

0.30 Leave valley, bears N. 25 W.

11.80 Top of mountain ridge, bears South.

16.80 Leave fallen timber and enter prairie valley, course N. N. E.

17.80 Dry bed of creek, stony bottom, course N. N. E.

31.30 Offset from tangent to Parallel, to 182nd mile corner. Marked stone 10 x 6 x 3 -182 M.- and deposited 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 18 x 8 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.-.-N. M.- -1868- -182 M.- respectively.

No natural objects near.

[fol. 463] Surface mountainous, covered with fallen timber.

Soil 3d rate.

West on 183d Mile

Variation 13° 50′ East.

39.00 Branch of the Rio los Pinos, 20 lks. wide, clear water, rapid current, stony bottom; general course N. E.

52.50 Canon, 200 lks. wide, bears S. E.

80.00 Offset from tangent to Parallel, to 183d mile corner. Marked stone 8 x 4 x 3 -183 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18 x 10 x 8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.-.-N. M.- -1868- -183 M.- respectively.

Chains

No natural objects near.
Surface mountainous, covered with fallen timber and Aspen brush.
Soil 2nd rate

West on 184th Mile

Variation 13° 50' East.
71.00 Top of ridge, descending into canon, bears North.
79.70 Canon, 600 feet deep, bears N. N. E.
80.00 Offset from tangent to Parallel, to 184th mile corner.
Marked stone 12 x 7 x 3 -184 M.- and deposited it, 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 14 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -184 M.- respectively.
From which point
Valley of the Los Pinos, bears North, 30 chs. dist.
Surface mountainous.
Soil 3rd rate.

West on 185th Mile

Variation 13° 50' east.
0.30 Creek, 12 lks. wide, clear water, rapid current, rocky bottom, course N. N. E.
1.00 Leave canon, bears N. N. E., and ascend steep mountain side.
9.00 Top of bluff, bears N. N. E.
26.00 Small spring branch, a little south of line, course E. N. E.
[fol. 464] and E. S. E.
80.00 Offset from tangent to Parallel, to 185th mile corner.
Marked stone 10 x 8 x 3 -185 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16 x 10 x 6, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -185 M.- respectively.
From which point
A Fir tree, 16 in. dia. bears S. 58 W., 11 lks. dist.
A spruce tree, 8 in. dia. bears N. 58 E. 7 lks. dist.
Surface broken, covered with fallen timber, aspen brush and a few fir and spruce trees.
Soil 3d rate.
Sept. 16th. Measuring chain compared with standard and found correct.

Chains

West on 186th Mile

Variation 13° 55′ East.

3.00 Creek, 2 lks. wide, clear water, rapid current, course North.

9.40 Point of mountain, bears N. 78 W.
Hay stack mound on snowy range, bears N. 60¼ W.
High point on same, bears N. 53 W.
Offset on same, bears N. 47½ W.
High Point, bears N. 32½ W.

61.50 Leave heavy fallen timber and enter Prairie valley, bears North.

74.50 Creek, 20 lks. wide, clear water, rapid current, rocky bottom, course N. N. E.

76.00 Indian trail, bears S. S. W.

80.00 Offset from tangent to Parallel, to 186th mile corner. Marked stone 12 x 6 x 7 -186 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 16 x 12 x 10, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- N. M.- -1868- -186 M.- respectively.
From which point
A Spruce tree, 18 in. dia., bears S. 37 E., 27 lks. dist.
No other tree near.
Small Peak, bears N. 70 W., about 20 chs. dist.
Small Peak, bears N. 15 W., about 15 chs. dist.
High Point, bears N. 30 E., about 1¾ miles dist.
High Point, bears N. 58 E., about 2 miles dist.
High Point bears S. 4 E., about 1 mile dist.

[fol. 465] Point of mountain ridge bears N. 54 W., ¾ M. dist.
Surface mountainous, 10 chs. from corner, the line runs along a side hill, that descends to the North, for 20 chs., covered with thick fallen Fir and Spruce timber.
Soil 2nd.

West on 187th Mile

Variation 13° 56′ East.

17.00 Leave valley and enter fallen timber, bears N. E.

48.00 Commence to descend into valley, bears S. W. and N. E.

72.00 Leave fallen timber, bears S. S. W.

75.20 Creek, 8 lks. wide, clear water, rapid current, rocky bottom, course N. N. E.

80.00 Offset from tangent to Parallel, to 187th mile corner. Marked stone 6 x 5 x 4 -187 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 10, projecting 8 in. above mound marked on the North, South,

Chains

West and East sides of -N. M.- -1868- -187 M.- respectively.
No natural objects near.
Surface mountainous, covered with fallen timber.
Soil 2nd rate.

West on 188th Mile

Variation 13° 50' East.
8.00 Leave valley and enter fallen timber, bears South.
25.00 Top of mountain ridge, 600 feet above level of valley, bears S. S. W. Variation 15° East.
28.50 Mountain Peak bears N. 75 W.
Offset of mountain ridge, bears N. 70 W.
Hay stack Peaks, bears N. 60 W. = N. 35 W.
Mountain ridge bears N. 42 W.
Offset of mountain ridge--bears N. 36 W.-N. 26 W.-N. 12 W.
Mountain ridge, bears N. 70 W.
72.50 Creek, 6 lks. wide, clear water, rapid current, bears N. N. W.
80.00 Offset from tangent to Parallel to 188th mile corner.
Marked stone 8 x 6 x 3 -188 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep., Set volcanic stone 24 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -188 M.- respectively.
From which point a
[fol. 466] Timbered hill, bears S. 27 W.-S. 47 W.
Prairie Peak, bears S. 65 W.-S. 72 W.
Volcanic stone boulder, 15 x 10 x 10 feet, on volcanic ledge, or Peak, bears N. 67 W.
Volcanic ledge, on side hill, bears N. 57 W.
West Point of mountain ridge, or ledge of rock, bears N. 7 E.
A Spruce tree, 12 in. dia., bears N. 8 W., 190 lks. dist.
No other tree near.
Surface mountainous.
Soil 2nd rate.
Sept. 17th. Measuring chain compared with standard and found correct.

West on 189th Mile

Variation 14° East.
5.50 Enter valley, bears E. N. E.
6.60 Creek, 10 lks. wide, clear water, rapid current, course E. N. E.

Chains

15.00 Leave valley, bears E., S. E.
17.80 Volcanic boulder, bears N. 63 E., 10 lks. dist.
Rock on end of ridge, bears N. 10 W., 12 chs. dist.
37.50 Top of mountain ridge, commence to descend side of mountain, 800 feet high, bears N. E. and S. 80 W.
61.50 Perpendicular cliff of volcanic stone, 100 feet high, about 50 lks. South of line.
80.00 Place for 189th mile corner on side of bluff, impossible to establish corner.
No natural objects near.
Surface mountainous.
Soil 3d rate.

West on 190th Mile

Variation 14° East.
10.50 Enter Prairie valley, covered with a fine growth of grass, bears N. W.
15.84 High volcanic Peaks bears S. 42 E. = S. 20 E. = S. 7 E. = S. 15 W. = N. 63 W.
Point of mountain ridge, bears N. 55 W.
Point of volcanic rocks bears N. 45 W.— N. 33 W.
Slide of mountain top, having the appearance of white sand, bears N. 28 W., about 2½ miles dist.
51.00 Creek, 5 lks. wide, clear water, rapid current, course North.
51.25 Large volcanic boulder, 6 lks. South.
56.50 Creek, 8 lks. North, course North.
65.00 Top of bluff, descend into valley.
80.00 Offset from tangent to Parallel, to 190th mile corner.
[fol. 467] Marked stone 6x4x4 -190 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr. and 18 in. deep. Set sand stone 16x8x8, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -190 M.- respectively.
No natural objects near.
Surface mostly gently rolling and descending to the N. W.
Soil 1st rate.
Sept. 18th. Measuring chain compared with standard and found correct.

West on 191st Mile

Variation 14° East.
11.50 East fork of the Rio Charmer, 150 lks. wide, clear water, [redacted] current, stony bottom, course W. S. W.
13.25 Leave Rio Charmer, course W. S. W., general course South.

Chains

High banks.

31.38 Indian trail, bears N. W.

53.25 Creek, 15 lks. wide, clear water, 2 in. deep, rapid current, stony bottom, course S.

69.00 Creek, 10 lks. wide, high banks, clear water, rapid current, course South.

80.00 Offset from tangent to Parallel, to 191st mile corner.
Marked stone 8x6x3 -19 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set volcanic stone 24x10x5, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -191 M.- respectively.
From which
A volcanic ledge of rock, bears N. 28 E. = N. 38 E.
Volcanic rock on ridge, bears S. 68 E. = S. 60 E.
Volcanic rock on ridge, bears S. 45 E.
Mountain ridge having the appearance of white sand, bears S. 10 E.
Valley to the South.
Surface broken.
Soil 2nd rate.

[fol. 468]

West on 192nd Mile

Variation 13° East.

9.30 Stone, 20x10x6 feet, formed of Volcanic gravel.

15.00 Mountain slide, bears South.

30.00 Leave same at Point of mountain.
Volcanic rock North, 200 feet dist.
Variation 15° East.

35.00 Enter 2nd rate Pine and Fir timber, bears North.

61.00 Creek, 10 lks. wide, clear water, 3 in. deep, rapid current, course S. W.

80.00 Offset from tangent to Parallel to 192nd M. temporary corner.
Surface mountainous.
Soil 2nd rate.

West on 193d Mile

Variation 13° East.

23.50 Leave Pine and Fir timber and enter valley, bears S. W.

73.75 Creek, 15 lks. wide, muddy water, rapid current, stony bottom, course S. S. W.

Chains

80.00 Offset from tangent to Parallel, to 193d mile temporary corner.
Surface gently rolling.
Soil 2nd rate.
Sept. 18th. Measuring chain compared with standard and found correct.

West on 194th Mile

Variation 14° East.
16.50 Creek, 15 lks. wide, clear water, rapid current, stony bottom, course S. S. W.
23.00 Bed of Rio Charmer stony bottom course North, and
24.00 to water, 70 lks. wide, clear water, 24 in. deep, rapid current, stony bottom, course South, general course S. S. E.
Banks on East side low, on West side 6 ft. high.
28.00 Leave valley and enter fallen timber, bears South.
48.50 Enter valley, bears S. E.
50.00 Creek, 15 lks. wide, clear water, 3 in. deep, rapid current, stony bottom, course S. E.
Enter 2nd rate Fir and Aspen timber, bears S. E.
68.00 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course E. S. E.
80.00 Offset from tangent to Parallel, to 194th mile temporary corner.
[fol. 469] Surface, after leaving valley, mountainous, covered with 2nd rate Pine and Fir timber.
Soil 2nd rate.

West on 195th Mile

Variation 14° East.
16.50 Enter dead timber, bears South
35.00 Creek 6 lks. wide, clear water, rapid current, course E. S. E. and enter 2nd rate Fir and Aspen timber, bears E. S. E.
68.50 Creek 3 lks. wide, clear water, rapid current, course E. N. E. and enter dead and fallen timber.
80.00 Offset from tangent to Parallel to 195th M. temporary corner on top of mountain ridge.
Surface mountainous, covered with 1st rate Pine and Fir timber.
Soil 1st rate.

West on 196th Mile

Variation 13° 55′ East.
26.00 Enter swamp, covered with willow brush, and fallen timber, bears N. W.

Chains

37.50 Leave swamp, bears S. E. and N. W.
79.00 Enter 2nd rate Pine and Fir timber, bears N. and S.
80.00 Offset from tangent to Parallel, to 196th mile temporary corner.
Surface broken, mostly covered with fallen timber.
Soil 2nd rate.

West on 197th Mile

Variation 13° 55' East.
60.00 Leave 1st rate Pine and Fir timber and enter aspen brush, on side mountain, bearing to the South.
80.00 Place for 197th mile temporary corner, impossible to establish it.
Surface mountainous.
Soil 2nd rate.
Sept. 19th. Measuring chain compared with standard and found correct.

West on 198th Mile

Variation 14° East.
4.00 Foot of hill, to ravine, 50 lks. south.
11.00 Top of high bluff, bears North and South.
20.00 Enter 2nd rate Aspen timber, bears S. E.
37.50 Enter valley, bears South.
40.00 Creek, 15 lks. wide, clear water, 4 in. deep, rapid current,
[fol. 470] stony bottom, course South, thick willow brush along banks.
42.00 Leave valley and enter Aspen brush, bears S. E.
70.00 Enter 2nd rate Fir timber, bears N. E.
80.00 Offset from tangent to Parallel to 198th mi. corner temporary.
Surface mountainous, mostly covered with aspen timber.
Soil 2nd rate.

West on 199th Mile

Variation 14° East.
10.50 Creek, 15 lks. wide, clear water, rapid current, course S. S. W.
34.25 Top of mountain ridge.
Stone wall on west side bears North.
57.50 Leave 2nd rate Aspen timber, bears South.
80.00 Offset from tangent to Parallel, to 199th mile, temporary corner.
Surface mountainous.
Soil 2nd rate.

Chains

West on 200th Mile

Variation 14° East.
1.00 Small stream in bottom of canon, bears South.
80.00 Offset from tangent to Parallel to 200th mile temporary corner.
Surface broken.
Soil 2nd rate.

West on 201st Mile

Variation 14° East.
3.10 Creek, 10 lks. wide, clear water, 6 in. deep, rapid current, course S. E.
40.00 Greatest depression of valley. A creek 5 lks. wide, clear but sluggish water, 10 in. deep, course S. E.
Several small spring branches near.
59.20 Indian trail, bears S. E.
80.00 Offset from tangent to Parallel to 201st mile temporary corner.
Surface rolling.
Soil 2nd rate.

West on 202d Mile

[fol. 471] Variation 14° East.
15.50 Creek, 8 lks. wide, clear water, rapid current, stony bottom, course N. E., willow brush on banks.
22.50 Enter 2nd rate Pine Fir and Aspen timber, bears N. and S.
44.00 Creek, 2 lks. wide, clear water, course North.
80.00 Offset from tangent to Parallel to 202nd mile temporary corner.
Surface broken, covered with 1st rate Aspen and fir timber, and an undergrowth of Oak and Aspen brush.
Soil 2nd rate.
Sept. 20th. Measuring chain compared with standard and found correct.

West on 203d Mile

Variation 14° East.
14.00 Summit of the divide of the Atlantic and Pacific waters, bears N. N. E.
68.50 Creek, 2 lks. wide, clear but shallow water, gentle current, course N. N. W.
80.00 Offset from tangent to Parallel to 203 mile temporary corner.

Chains

Surface broken on side of mountain and descend to the North.
Soil 2d rate.

West on 204th Mile

Variation 14° East.

1.00 Pond of water, or sink hole, 150 lks. wide, muddy water, average depth, 10 in.
42.00 Leave 2nd rate Pine and Aspen timber, and enter Oak brush, bears North.
80.00 Offset from tangent to Parallel to 204th mile, temporary corner.
Surface broken about ½, covered with Aspen and Fir timber, balance Oak brush.
Soil 2nd rate.

West on 205th Mile

Variation 14° East.

60.00 Leave Oak brush and enter Prairie valley, bears W. S. W.
79.75 Creek, 2 lks. wide, clear water, swift current, gravelly bottom, course W. S. ..
80.00 Offset from tangent to Parallel to 205th mile temporary
[fol. 472] corner.
Surface broken.
Soil 2nd rate.

West on 206th Mile

Variation 14° East.

5.00 Leave valley, bears W. S. W.
60.00 Enter 2nd rate Pine timber, bears North and South.
79.00 Enter valley, bears S. S. W.
80.00 Offset from tangent to Parallel to 206th mile temporary corner.
Surface broken.
Soil 2nd rate.

West on 207th Mile

Variation 13° 59' East.

1.00 Leave valley and enter scattering 2nd rate Pine timber, bears S. S. W.
25.00 Leave timber and enter valley, bears N. W.

Chains

29.50 Creek, 3 lks. wide, clear water, rapid current, course W. S. W.
37.50 Leave valley and enter scattering oak brush, bears W. N. W
58.00 Leave scattering oak brush, and enter valley, bears W. N. W.
80.00 Offset from tangent to Parallel to 207th mile temporary corner.
Surface broken.
Soil 2nd rate.
Sept. 27th. Measuring chain compared with standard and found correct.

West on 208th Mile

Variation 14° East.
4.00 Creek, 10 lks. wide, clear water, rapid current, stony bottom, course W. N. W.
4.40 Trail leading from Tierra Amarilla, N. M. to Pagosa Springs, Colo. bears W. N. W.
9.00 Leave valley, and enter 2nd rate scattering Pine timber and Oak brush, bears W. N. W.
37.00 Leave same, bears W. N. W. Enter valley bears N. W. Creek, 3 lks. wide, clear water, rapid current, course W. N. W.
46.00 Enter Oak brush and scattering 2nd rate Pine timber, bears W. N. W.
55.00 Leave scattering Pine timber, and enter Oak brush, bears
| fol. 473 | W. N. W.
80.00 Offset from tangent to Parallel to 208th mile temporary corner.
Surface broken.
Soil 2nd rate.

West on 209th Mile

Variation 14° East.
77.00 Top of mountain ridge, bears N. and S.
80.00 Offset from tangent to Parallel, to 209th mile temporary corner, in thick Aspen and Oak brush.
Soil 2nd rate.
Surface mountainous, covered with Oak, Aspen and willow brush.

West on 210th Mile

Variation 14° East.
6.00 A deep canon. Set flag on opposite bank of canon and thence North 8 chs., flag bears S. 71° 34′ W. Therefore we have the statement

Chains

	Sin 18° 26′ =	9.499965
	Sin. 71° 34′ =	9.977125
	Log. 8 chs. =	0.903090
	24 chs.	1.380252

30.00 Leave canon, 600 feet deep, and nearly perpendicular sides, bears S. S. W.

38.00 Canon, bears South, 500 feet deep. I set flag on opposite bluff, thence North 10 chs. flag S. 69 W, therefore we have the statement

	Sin. 21° =	9.554329
	Sin. 69° =	9.970152
	Log. 10 chs. =	1.000000
	chs. dist. 26.05 lks.	1.415823

64.05 Leave canon, almost perpendicular sides, of sand stone, bears South.

70.00 Canon, 500 feet deep, nearly perpendicular sides. Set flag on opposite bank, thence North 6 chs. flag bears S. 74 W., 8 chs., flag bears S. 69° 05′ W. Therefore we have the statement

[fol. 474]

Sin. 20° 55′ =	9.552680	Sin. 16° = ...	9.440338
sin. 69° 05′ =	9.970394	Sin. 74° = ...	9.982842
Log. 8 chs. =	0.903090	Log. 6 chs. = ...	0.778151
chs. 20.93 lks.	1.320840	chs. 20.94 lks. ..	1.320655

Mean 20.93½ lks.

80.00 Place for 210th mile corner in canon, impossible to establish corner.
Surface mountainous, covered with thick Oak and Aspen Brush.
Soil 2nd rate.
Sept. 28th. Measuring chain compared with standard and found correct.

West on 211th Mile

Variation 14° East.

10.93 Leave canon, bears South, and enter 2nd rate Pine timber.

80.00 Offset from tangent to Parallel to 211th mile temporary corner.
Surface mountainous.
Soil 3d rate.

Chains

West on 212th Mile

Variation 14° East.

70.00 Canon, 1000 feet deep, bears N. W. nearly perpendicular sides, of sand stone.*

Sin. 14° 22′ =	9.394673	Sin. 19° 46′ = ..	9.528458
Sin. 75° 38′ =	9.986202	Sin. 70° 16′ = ..	9.973716
Log. 10 chs. =	1.000000	Log. 14 chs. = ..	1.146128
39.04 chs.	1.591539	39.03 chs.	1.591386

Mean 39.03½ lks.

A stream of water, about 20 lks. wide, runs in canon, clear water, rapid current, stony bottom, course N. W.

80.00 Place for 212th mile corner on side of bluff, impossible to establish corner.

*Set flag on west side of canon, thence North 10 chs. flag bears S. 75° 38 W. 14 chs. S. 70° 16 W.

East on 206th Mile

Surface mountainous.
Soil 3d rate.

[fol. 475] West on 213th Mile

Variation 14° East.

29.04 Leave canon, 1000 feet deep. Bluffs on each side, nearly perpendicular, and composed of sand stone. A stream of clear rapid water in canon, course N. W.

80.00 Offset from tangent to Parallel, to 213th mile temporary corner.
Surface mountainous.
Soil 3d rate.

West on 214th Mile

Variation 14° East.

51.00 Enter valley, bears N. N. W.
53.00 Creek, 10 lks. wide, clear water, 1 in. deep, rapid current, gravelly bottom, course N. N. W.
55.50 Trail, bears N. N. W.
55.75 Set temporary witness corner, a sand stone 24x8x8.
70.00 Enter wet bottom, covered with willow brush, bears North.
80.00 Place for 214th mile corner in wet bottom subject to overflow to the depth of 7 feet. Impossible to establish corner.
Surface broken.
Soil 2nd rate.

Chains

West on 215th Mile

Variation 14° East.

4.00. Rio Navajoe, clear water, 18 in. deep, swift current, stony bottom, low banks, course S. W.

8.00 Over Rio Navajoe, course S. W.

20.00 Leave wet bottom, bears South.

24.75 Indian trail, bears S. S. W.

25.30 Astronomical monument No. 7. Offset from tangent to Parallel to a point 75 lks. South of astronomical monument No. 7 on Parallel. This monument is identified by a Pine charred post, 14 feet long, 12 in. square, set in a monument of stone, 5 feet high. Post marked on the North, South, West and East sides—"Colorado" "New Mexico" "1868" "37 N. L." respectfully.

Sept. 29th. Measuring chain compared with standard and found correct.

I corrected the line back East to 191st mile corner, a distance of 23 315/1000 miles making a correction of 3 22/100 lks. per mile.

[fol. 476]

East on 214th. Mile

Variation 13° East.

80.00 Place for 214th mile corner in wet bottom, subject to overflow, to the depth of 7 feet, impossible to establish corner.

24.25 Set witness corner, built conical mound of stone. Set sand stone 24x8x8, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- which is 73 lks. North of temporary witness corner.

East on 213th Mile

Variation 13° 59' East.

80.00 Moved temporary corner 70 68/100 lks. North and set true corner. Marked stone 5x4x3 -213 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -213 M.- respectively.

No natural objects near.

Chains

East on 212th Mile

Variation 13.59° East.

80.00 Place for 212th mile corner. Impossible to establish it.
No natural objects near.

East on 211th Mile

Variation 13° 59' East.

80.00 Moved temporary corner 64 24/100 lks. North and set true corner. Marked stone 5x3x3 -211 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long, 6 in. square, beveled at top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -211 M.- respectively.
No natural objects near.

East on 210th Mile

Variation 13° 59' East.

80.00 Place for 210th mile corner in canon but impossible to establish it.
No natural objects near.

[fol. 477] East on 209th Mile

Variation 13° 59' East.

80.00 Moved temporary corner 57 80/100 lks. North and set true corner in thick Aspen and Oak brush. Marked stone 6 x 6 x 3 -209 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -209 M.- respectively.
No natural objects near.

Chains

East on 208th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 54 58/100 lks. North and set true corner. Marked stone 10 x 6 x 3 -208 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Oak post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -208 M.- respectively.

From which

Mountain Peak, bears N. 26 W., about 30 M. dist.
Point of mountain ridge, bears N. 4. E.
Mountain Peak bears N. 28 E. -N. 70 E.- S. 45 W.

East on 207th Mile

Variation 12° 58′ East.

80.00 Moved temporary corner 51 36/100 lks. North and set true corner. Marked stone 5 x 5 x 4 -207 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at the top, three feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -207 M.- respectively.

From which point of

Timbered Peak, bears S. 55 W.
Perpendicular ledge of rock, bears S. 25 W. 30 chs. dist.

[fol. 178] East on 206th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 48 14/100 lks. North and set true corner. Marked stone 6 x 5 x 3 -206 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.

Chains

Charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -206 M.- respectively.

From which point

A Pine tree, 30 in. dia. bears N. 15 E. 250 lks. dist.
A Pine tree, 39 in. dia. bears S. 72 W., 237 lks. dist.

East on 205th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 44 92/100 lks. North and set true corner. Marked stone 6 x 4 x 3 -205 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred oak post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -205 M.- respectively.

From which point a

High point, bears N. 55 E., 5 chs. dist.
High Point, bears North, 20 chs. dist.
High Point, bears South 25 chs. dist.

East on 204th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 41 70/100 lks. North and set true corner. Marked stone 3 x 3 x 2 -204 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 16 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -204 M.- respectively.

From which point

Timbered Peak, bears South, 2 miles dist.
Point of perpendicular rock, bears S. 58 W.
Conical Peak, bears N. 3 W., 20 chs. dist.

Chains

[fol. 479]

East on 203d Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 38 48/100 lks. North and set true corner. Marked stone 8 x 6 x 3 -203 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -203 M.- respectively.

From which point

An aspen tree, 1 in. dia. bears N. 5 W., 57 lks. dist.
An aspen tree, 8 in. dia. bears S. 5 W., 25 lks. dist.

East on 202nd Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 35 26/100 lks. North and set true corner. Marked stone 5 x 5 x 4 -202 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Aspen post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- N. M.- -1868- -202 M.- respectively.

From which

An aspen tree, 16 in. dia. bears N. 5 W. 17 lks. dist.
An aspen tree, 12 in. dia. bears S. 7 E., 25 lks. dist.

East on 201st Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 32 04/100 lks. North and set true corner. Marked stone 10 x 6 x 6 -201 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -201 M.- respectively.

Chains

From which point a

Conical point, on East of Sierra Navajoe, bears N. 40 E.
Highest point on North of Sierra Navajoe, bears N. 24 W.
[fol. 480] Most Northern point of Southern ridge of Sierra Navajoe bears S. 66 E.

East on 200th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 28 82/100 lks. North and set true corner. Marked stone 12 x 5 x 4 -200 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -200 M.- respectively.
No natural objects near.

East on 199th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 25 60/100 lks. North and set true corner. Marked stone 4 x 4 x 3 -199 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Aspen post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -199 M.- respectively.

From which point

An aspen tree, 10 in. dia. bears S. 55 W., 27 lks. dist.
An aspen tree, 8 in. dia., bears S. 45 W., 23 lks. dist.

Chains

East on 198th Mile

Variation 13° 59′ East.

80.00 Moved temporary corner 22 38/100 lks. North and set true corner. Marked stone 6 x 5 x 5 -198 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -198 M.- respectively.

From which.

A Fir tree, 12 in. dia. bears S. 40 E., 9 lks. dist.
[fol. 481] A Fir tree, 10 in. dia. bears N. 15 W. 6 lks. dist.

East on 197th Mile

Variation 13° 54′ East.

80.00 Place for 197th mile corner, on mountain side, impossible to establish it.

East on 196th Mile

Variation 13° 54′ East.

80.00 Moved temporary corner 15 94/100 lks. North and set true corner. Marked stone 4 x 4 x 4 -196 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep.
Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -196 M.- respectively.
From which point
A Fir tree, 10 in. dia. bears S. 25 W., 15 lks. dist.
A Fir tree, 15 in. dia. bears N. 25 E., 23 lks. dist.
Summit of mountain ridge, bears South.

Chains

East on 195th Mile

Variation 13° 59' East.

80.00 Moved temporary corner 12 72 100 lks. North, and set true corner on top of mountain ridge. Marked stone 6 x 5 x 4 -195 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -195 M.- respectively.
No natural objects near.

East on 194th Mile

Variation 13° 59' East.

80.00 Moved temporary corner 9 50 100 lks. North and set true corner. Marked stone 4 x 3 x 3 -194 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir post, 8 feet long and 6 in. square, beveled at
[fol. 482] top, 3 feet in ground, projecting 12 in. above mound, marked on the north, South, West and East sides -C- -N. M.- -1868- -194 M.- respectively.

From which point

A Fir tree, 16 in. dia. bears N. 20 W., 46 lks. dist.
A Fir tree, 20 in. dia. bears S. 38 E., 28 lks. dist.

East on 193d Mile

Variation 12° 59' East.

80.00 Moved temporary corner 6 28 100 lks. North and set true corner. Marked stone 8 x 5 x 4 -193 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Fir Post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -N. M.- -1868- -193 M.- respectively.

Chains

From which point a

High Peak, bears N. 60 W.
Timbered Peak, bears North.
Mountain slide, bears N. 21 E., ¾ mile dist.
Volcanic ledge, bears N. 32 E., 1 mile dist.
Point of mountain ridge, bears N. 52 E.
Mountain Peak, bears N. 75 E.
Mountain Ridge, bears S. 30 E.
Mountain Peak, East of valley, bears S. 3 W.
Valley, bears S. 10 W.
Point of Ridge, bears S. 18 W.

East on 192nd Mile

Variation 12° 59′ East.

80.00 Moved temporary corner 3.06/100 lks. North and set true corner in dead timber. Marked stone 10 x 6 x 3 -192 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South West and East sides -C- -N. M.- -1868- -192 M.- respectively.
No natural objects near.

[fol. 483] Observations for asimuth at Astronomical Monument No. 7, on d Ursae Minoris Dec. 86° 36′ 44″ .3 RA 18. 14. 44. and 51 Cephei Dec. 87° 14′ 02″ .5 RA 6. 37. 56.5 Sept. 30th, 1868. Chronometer fast at mean noon, on Solar time

h
5.
m s
46. 21 with a loosing rate of 22 s per day.

Lower transit of d Ursae Minoris

	h	m	s
Oct. 1st A. M.—Chronometer time	11.	18.	43.
Upper transit of 51 Cephei	11.	41.	58.5
Chronometer intervals		23.	15.5
Chronometer rate			0.3
Reduction, to Sidereal time			3.8
Sidereal interval		23.	19.6
Interval between upper and lower transit		23.	12.5
			7.1

Chains

Computation

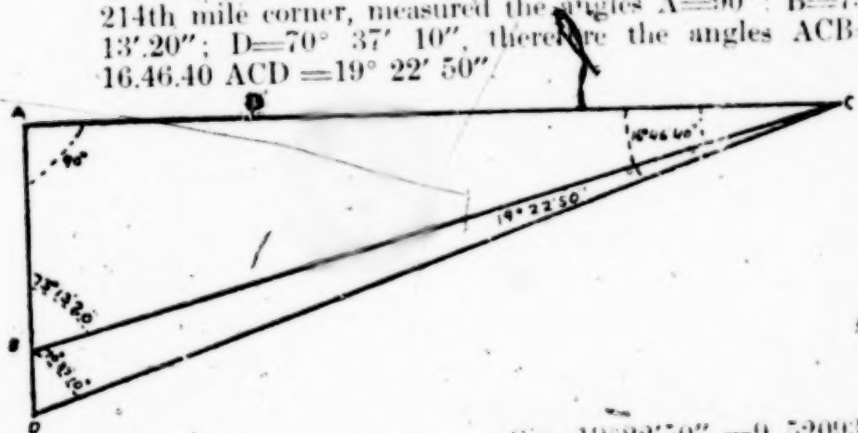
$\triangle 7^{s}$ .1=106″.5	Log.=2.02735	
Cos. d 86° 36′ 44″	=8.77300	Magnetic
Cos. d 87° 14′ 25″	=8.68356	Variation
Sec. ϕ 37°	=0.09765	14° East.
Cosec. 6° 09′ 13″	=0.96982	
Fast of true asimuth 3^{s}.56	0.55148	

West from Astronomical Monument No. 7 on 215th Mile

Variation 14° East.

1.70 Foot of ridge, bears South.
9.70 Top of ridge, bears S. S. W.
17.70 Foot of Ridge and enter valley, bears South.
19.70 Creek, 20 lks. wide, clear water, rapid current, course South. Willow brush along banks and beaver dams every few chains.
26.20 Indian trail, bears South.
32.70 Leave valley and enter 2nd rate Pine timber, bears S. S. E.
54.70 Offset from tangent to Parallel to 215th mile temporary
[fol. 484] corner.

Surface mostly level Prairie. Soil 2nd rate. It being impossible to measure the line up the mountain ridge, West of the 115th mile corner. I set flag on ridge, and formed the triangles ABC—ADC from a point 35 chs. West of 214th mile corner, measured the angles A=90°; B=73° 13′.20″; D=70° 37′ 10″, therefore the angles ACB=16.46.40 ACD =19° 22′ 50″.



Sin. 19°22′50″	=9.520930
Sin. 70°37′10″	=9.974666
Log. 70 chs.	=1.845098
188.99 chs.	2.298834

Chains

Sin. 16°46'40"=9.460387
Sin. 73°13'20"=9.981108
Log. 60 chs. =1.778151

199.01 chs. 2.298872

Large 198.99
Small 199.01 chs. chs.
Mean of computations 199.00

Therefore at 74 chs. on 117th mile, top of Myer ridge, nearly level on top.
Variation 14° East.

West on 217th Mile

Variation 14° East.

80.00 Offset from tangent to Parallel, to 217th mile temporary corner.
Surface broken.
Oct. 2nd. Measuring chain compared with standard and found correct.

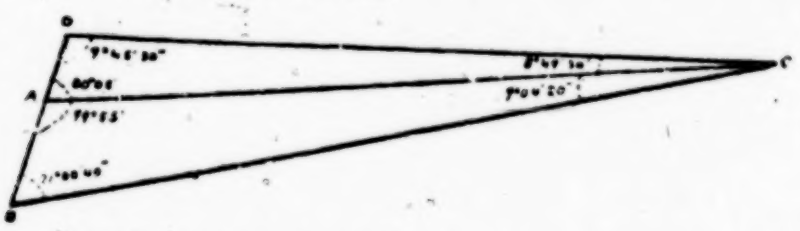
West on 218th Mile

Variation 13° 56' East.

14.30 High perpendicular cliff. The country West of this point is cut up by deep canons and high ridges, making it impossible to measure line with chain and this ridge being the only point that I could get a base that could be measured with sufficient accuracy for computing the distance. I found the triangle ABC-ADC and BCD, the point C is a lone
[tol. 485] Pine tree, standing near the West end of a high mountain ridge, and cannot be mistaken for any other. The above

M

named tree is 5° North of the line, or N 89.55 W. I run N. 10 E. 147 chs. 50 lks. formed the *the* triangle ABC measured angles A=90° 55'. B=71° 0'. 40". I formed the triangle ADC, the measured angles A=89° 05', D=94° 53' 30", hence we have the angles ACB=9° 04' 20" ACD=5° 49' 30" and angle DCB=14° 53' 50", AD=90 chs. and BD=23.75 chs.



In order to determine the length of the line A C = we have the following statements:

Chains

Sin. 9° 04'20" = 9.197775	In triangle A D C' we have
Sin. 71° 00'40" = 9.975699	
Log. 147.50 chs. = 2.168792	Sin. 5° 49'30" = 9.0064249
2.946716	Sin. 94° 05'30" = 9.9988916
	Log. 90 chs. 1.9542425
	2.9467092

In triangle D B C.

Angle C = 14° 53'50"	9.4100783
Angle B = 71° 00'40" =	9.9756991
Side B D. 237.5 chs. =	2.3756636
Side D C 873.54 chs.	2.9612844

Point D West of Point A	15.63 chs.
	889.17
Difference between measurement on line A C and D C	4.65
	884.52

	Mean
1st comp'n	884.54
2nd do.	884.52
3rd do.	884.52
	884.52

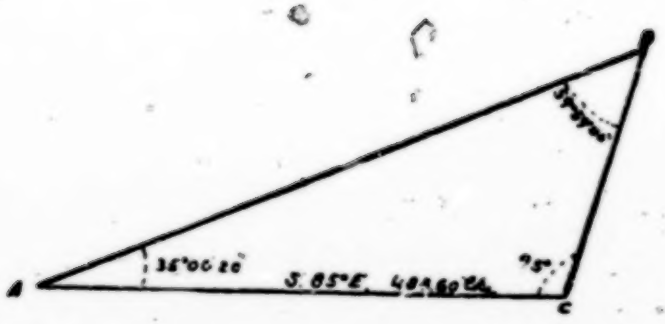
[fol. 486]

M. chs. lks.

Point C or tree on bluff is 11 04 52 6.10 West of point A, in triangle, or 18 chs. 82 6 10.1ks. on 129th mile. Tangent 147 lks. South of line, Parallel is 28 lks. North of tree, or point C. The North point of ridge is 50 lks. North. The South point 50 lks. South of point D and B in triangle. Perpendicular bluffs on each side. In order to determine the point where the boundary line crosses the Rio Navajoe, from point on the bluff, on the West side of the stream I took the following bearings of the North and South points of the mountain ridge, where the triangulation was made from a point on bluff on the South point of the ridge, bearing S. 85° E., North point bears N. 69° 59' 40" E. Therefore I have the triangle A B C, with the angles A = 25° 00' 20", B = 59° 59' 40" and C = 95°

Sin. 25° 00'20" = 9.6260386	
Sin. 59° 59'40" = 9.9375063	
chs.	
Log. 238.50 = 2.3774884	
488.60 chs.	2.6889561

Chains



South point of bluff being S. 19 W. 99 chs. 50 lks. from point 14 chs. 30 lks. West of 217th mile corner, is 89 chs. 12 lks. South of line, and 30 chs. 02 lks. further west than 217th mile corner. S. 85 E., 488 chs. 60 lks. + 42 Lat. 61 chs. 468 DEP. 75 chs. + 30.02 = 516.77 lks. West of the 217th mile cornerser 36 chs. 77 lks. further West than the place for the 223d mile corner, 89 chs. 12 lks. + 42 chs. 61 lks. = 46 chs. 51 lks. + 28 lks. for distance Northwof the Parallel = 46.23 lks. South of Parallel, thence N. 2 E. 46.54 chs. to a point on Parallel 35 chs. 14 lks. West of 223d mile. Bluff of the Rio Navajoe, 100 lks. East thence West on 224 mile.

Variation 13° 56' East

35.70 Indian trail, bears North.

35.80 Set a temporary witness stone monument.

39.50 Rio Navajoe, 100 lks. wide, 18 in. deep, stony bottom, rapid current, course N. W.

41.00 Foot of nearly perpendicular cliff, 4 feet high, bears N. W.

[fol. 187] It being impossible to measure further with chain on line on account of the number of deep canons, and abrupt ridges. Tree on line on bluff, 19 lks. North of Parallel. I here built temporary mound of earth and stone. I found it impossible to measure line with chain from this point to valley, on account of the precipitous character of the ridges and deep canons. I, from a point on ridge, on tangent, caused a flag to be set on a small elevation, near the valley, and at that point, I formed the triangle A B C and A D C, measured angles A = 90 B 77.53.05, D 71.40.40, hence the angle A C B = 12.26.55; A D C 18.19.20, measured sides A B = 40, A D = 60, hence we have

Sin. 12°26'55"	= 9.339576	Sin. 18°19'20"	= 9.497428
Sin. 77°33"	= 9.989672	Sin. 71°40'40"	= 9.977405
Log. 40 chs.	= 1.602060	Log. 60 chs.	= 1.778151
181.20 chs.	2.258156	181.19 chs.	2.258128

Chains

West on 231st Mile

Variation 14° East.

43.00 Enter San Juan valley, bears S. W.

78.00 Bend in Rio San Juan, clear water, rapid current, stony bottom, course S. W.

Offset from tangent to Parallel and set temporary witness corner. Offset South 5 chs. in order to measure line, thence West 20 chs. offset back to line, on left bank of river.

Surface except valley, mountainous, cut up by deep canons, covered with scrub Pine timber.

Soil 3d rate.

West on 232nd Mile

Variation 14° East.

20.00 Leave bend in Rio San Juan, clear water, rapid current, stony bottom, course W. S. W.

63.00 Bend in Rio San Juan, average depth about 2 feet, course [fol. 488] W. S. W.

71.50 Sandbar, in river.

73.50 Leave sand bar and enter water, course W. N. W.

75.00 Sand bar, bears W. N. W.

80.00 Place for temporary 232nd mile corner on sand bar, and impracticai — establish it. Subject to inundation, to the depoth of 10 feet. Bottom also subject to inundation, to the depoth of 6 feet.

Surface on South side of river mountainous, on the North side, valley is about ¾ of a mile wide.

Soil in valley 2nd rate.

West on 233d Mile

Variation 14° East.

31.75 Leave sand bar, and bed of Rio San Juan, course W. N. W.

79.00 Canon, bears N. E.

Chains

79.50 Dry bed of Creek. 5 lks. wide, stony bottom, course N. E.
80.00 Offset from tangent to Parallel to 223d mile temporary corner, in canon.
Surface broken.
Soil 3d rate.

West on 234th Mile

Variation 13° East.
60.00 Top of bluff, descending into canon, bears N. N. E.
72.00 Dry bed of creek, stony bottom, course N. N. E.
80.00 Place for 234th mile corner, on side of bluff, impossible to establish it.
Surface mountainous, covered with scrub Pine timber.
Soil 3d rate.

West on 235th Mile

Variation 14° East.
12.00 Top of bluff, bears North.
21.00 Peak on mountain ridge, bears N. 37¾ W
28.50 Dry bed of creek, sandy bottom, course North.
80.00 Offset from tangent to Parallel to 235th mile temporary corner.
Surface mountainous and stony, covered with scattering scrub Pine timber.
Soil 3d rate.

[fol. 489] Oct. 7th. Measuring chain compared with standard and found correct.

It being impossible to measure on line with chain on account of the broken condition of the surface, I offset North, forming a right angle with tangent, 68 chs. thence West on Parallel with tangent 4 M. 40 chs., offset South at right angles to tangent, 68 chs. to tangent.
Surface on offset broken, also along side of mountain, covered with scrub, Pine and Cedar timber.
Soil 3d rate.

West on 240th Mile

Variation 14° East.
61.00 Leave mountains and enter San Juan Valley bears S. W.
A gradual descent from bluff to river.

Chains

80.00 Offset from tangent to Parallel, to 240th mile, temporary corner.
Surface except bottom, mountainous, covered with scrub cedar and pine timber and Oak brush.
Soil 2nd rate.

West on 241st Mile

Variation 14° East.
68.00 Ente: scattering 2nd rate cottonwood timber, bears S. W.
74.00 Rio San Juan, course S. S. W.
78.50 Leave Rio San Juan, clear water, about 30 in. deep, rapid current, stony bottom, low banks, course S. S. W.
80.00 Place for 241st mile corner, on side of bluff, impossible to establish it.
Surface on east side of river, a gradual descent to it.
Soil 2nd rate.

West on 242nd Mile

Variation 14° East.
4.00 Top of bluff bears S. W.
9.00 Indian trail, bears S. S. W.
19.00 Descend into valley, bears South.
21.70 Offset from tangent to Parallel, to a point 410 lks. South of Astronomical Monument No. 8 which is represented by a granite stone 6 feet long x 10 x 11 in. marked on the North, South, West and East sides "Colorado" "New Mexico" "1868" "37 N. L." respectively.
Dug pits 2 feet square and 18 in. deep on the North, South,
[fol. 490] West and East sides.
I therefore make a correction of 15 8/10 lks. per mile North. Thence

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East on 242nd Mile

Variation 13° 53′ East.
21.70 Place for 241st mile corner on side of bluff, impossible to establish it.

East on 241st Mile

Variation 13° 53′ East.
80.00 Moved temporary corner 3.90 2/10 chs. North and set true corner to 240th mile. Marked stone 5 x 5 x 4 -240 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and

Chains

West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 16 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -240 M.- respectively.
No natural objects near.

East on 240th Mile

Variation 13° 53′ East.
Impossible to establish the 239th-238-237- and 236 mile corners.

Offset from 235th mile temporary corner 3.14 8/10 chs. North, and set true corner. Set a sand stone 5 x 4 x 2 marked on the North, South, West and East sides -C.- -N. M.- -1868- -235 M.- *respectfully*. Dug pits 10 lks. East and West from stone, 2 feet square and 18 in. deep.

From which point

A sand stone 7 x 6 x 3 feet bears S. 45 E., 9 lks. dist.

East on 234th Mile

Variation 12° 53′ East.

80.00 Moved temporary corner 2.99 chs. North and set true corner to 233d mile. Marked stone 4 x 3 x 2—and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 8 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -234 M.- respectively.

[fol. 491] No natural objects near.

East on 233d Mile

Variation 12° 53′ East.

80.00 Place for 232nd mile corner on sand bar in Rio San Juan, and impossible to establish it.

From which point

Point of ridge bears N. 20 W., 3 miles dist.
Point of ridge, bears S. 5 E., 40 chs. dist.

Chains

East on 232nd Mile

Variation 13° 53' East.

80.00 Place for corner in river.

82.00 Moved temporary witness corner 252 9/10 lks. North on 232nd mile, and set true corner. Built conical mound of earth and stone 4 feet high. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 16 x 10, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868-. No natural objects near.

East on 231st Mile

Variation 13° 53' E.

Impossible to establish the 230-229-228-227-226- and 225th mile corners.

East on 229th Mile

Variation 13° 49' East.

80.00 Moved temporary witness corner on 224th mile, 2 chs. 19 lks. North, and set true witness corner. Built conical mound of earth, 4 feet high. Set sand stone 30 x 12 x 4 marked on the North -C.- South -N. M.- East -37 N. L.- West -1868-.

The above corner is on a high ridge, about 1½ miles South of Rio San Juan.

From which point

A Pine tree, 20 in. dia. bears South 2.11 lks.
No other tree near.

From Witness Corner 35.80 lks West on 224th Mile

Variation 13° 59' East.

Moved temporary witness corner 1.29 lks. North, and set true witness corner. Built conical mound of earth, 4 feet
[fol. 492] high. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 20 x 10, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -37 N. L.-

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East on 224th Mile

Variation 13° 49' East.

Impossible to establish 223-222-221 and 220 mile corners.

Chains

Moved 217th mile temporary corner 40 9/10 lks. North and set true corner. Marked stone 5 x 4 x 4 -217 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 23 x 10 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -217 M.- respectively.
No natural objects near.

Impossible to establish 216th mile corner.

Moved 215th mile temporary corner 10 5/10 lks. North, and set true corner. Marked stone 6 x 5 x 3 -215 M.- and deposited it 3½ feet in earth. Built conical mound of earth 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -215 M.-

From which point

A Pine tree, 20 in. dia., bears N. 15 W., 40 lks. dist.
A Pine tree, 16 in. dia. bears S 10 E., 25 lks. dist.

Observations for Asimuth, Oct. 10th A. M. at Astronomical Monument No. 9 on d Ursæ Minoris R. A. h 18. m 14. s 32.2 Dec. 86° 36′ 44″ and 51 Cephei R. A. h 6. m 37. s 46 Dec. 87° 14′ 03″ .5. Chronometer fast at mean noon, on Solar time h 5. m 46. s 21, with a loosing rate of 20 per day.

[fol. 493] Chron. time of Obs'n of d Ursæ Minoris, A. M. lower transit ..... h 10. m 44. s 25.

Chron. time of Obs. of 51 Cephei, upper transit ..... h 10. m 07. s 40.

Chains

Chronometer interval	..	23. 45
Chronometer rate	.. ..	0.3
Reduction to Sidereal time	.. ..	3.8
	23.	19 1
	23.	07
		.12

$\triangle 12^{s} = 18''.0$ Log.

Cos.d 86° 36′ 44″ =	8.77300	
Cos.d 87° 14′ 03″ =	8.68366	
37° =	0.09765	Va. 14° East.
Cosec. 6° 09′ =	0.96982	
Error 6″.6	0.77940	

West from Astronomical Monument No 8

21.70 lks. West on 242nd Mile

Variation 14° East.

26.00 Dry bed of Creek, 10 lks. wide, high banks, stony bottom. Course S. S. E.

31.00 Top of Hill, or ridge, bears S. S. E., and enter scrub pinion Pine and Cedar timber, bears S. S. E.

58.00 Leave timber, and enter sage brush Prairie bears South.

80.00 Offset from tangent to Parallel, to 242nd mile corner.
Marked stone 5 x 5 x 4 -242M.- and deposited it 3½ feet in earth. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -242M.- respectively.
No natural objects near.
Surface level, except 1st 30 chs.
Soil 2nd rate.

[fol. 494] West on 243d Mile

Variation 14° East

74.50 Dry bed of Creek, 50 lks. wide, high banks, gravelly bottom, course South.

80.00 Offset from tangent to Parallel to 243d mile corner.

Chains

Marked stone 4 x 4 ⅜ -243M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred cedar post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -243M.- respectively.

From which point a

Conical Peak, bears N. 7 E.
High Point, on mountain ridge bears N. 58 E.
A large tree, on conical peak, bears S. 45 E.
Point of ridge, bears South.
Point of Ridge, bears S. 40 W., 1½ miles dist.
Surface gently rolling, covered with sage brush.
Soil 2nd rate, gravelly.

West on 244th Mile

Variation 14° 02' East.

36.50 Dry bed of Creek, high banks, sand and gravelly bottom, course S. S. E.

67.25 Indian trail, bears N. W.

80.00 Offset from tangent to Parallel, to 244th mile corner. Marked stone 10 x 4 x 4 -244M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred cedar post, 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- 244 M.- respectively.

From which point, a

Point of Ridge, bears N. 79 W.
Point of ridge, bears N. 12 W., 10 miles dist.
Conical Peak, bears N. 13 E.
Mountain Peak, bears N. 36 E., 35 miles dist.
Mountain Peak, bears N. 82 E., 45 miles dist.
Point of mountain ridge, bears S. 54 E., 12 M. dist.
Surface gently rolling, covered with sage brush.
[fol. 495] Soil 2nd rate.

Chains

West on 245th Mile

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel to 245th mile corner. Marked stone 8 x 6 x 3 245M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North C. South N. M. West 1868 *South* 245M.
No natural objects near.
Surface gently rolling.
Soil 2nd rate.

West on 246th Mile

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel, to 246th mile corner. Marked stone 6 x 4 x 3 246M. and deposited it 3½ feet in ground. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North C. South N. M. West 1868 East 246M.
No natural objects near.
Surface gently rolling.
Soil 2nd rate.

West on 247th Mile

Variation 14° 03′ East.

36.50 Enter scattering scrub Pine and Cedar timber, bears South.
58.00 Top of ridge, 400 feet above valley, bears N. W.
80.00 Offset from tangent to Parallel, to 247th mile corner. Marked stone 6 x 4 x 3 247M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40 x 10 x 4, projecting 8 in. above mound, marked on the North C. South N. M. West 1868 East 247M.
No natural objects near.
Surface 1st half, level 2nd half broken.
Soil 2nd rate.

Chains

[fol. 496]

West on 248th Mile

Variation 14° 03′ East.

14.00 Descend into valley, 150 feet deep.

47.00 Top of bluff, on west side of valley, bears N. E.

74.00 Leave scrub Pine and cedar timber, bears North.

80.00 Offset from tangent to Parallel, to 248th mile corner. Marked stone 6 x 5 x 3 248M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 19 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North C. South N. M. West 1868 East 248M.
No natural objects near.
Surface broken.
Soil 3d rate.

West on 249th Mile

Variation 14° 03′ East.

7.00 Enter scattering pinion, Pine and Cedar timber, bears N. E and S. W.

80.00 Offset from tangent to Parallel, to 249th mile corner. Marked stone 5 x 5 x 3 249M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 12 projecting 8 in. above mound, marked on the North C. South N. M. West 1868 East 249M.
No natural objects near.
Surface mountainous, covered with scrub Pine timber.
Soil 3d rate.
Oct. 10th. Measuring chain compared with standard and found correct.

West on 250th Mile

Variation 14° 03′ East.

8.50 Perpendicular bluff, bears S. W.

23.50 Point of perpendicular sand stone bluff, about 1200 feet above valley, and 40 feet perpendicular.

58.00 Leave scattering pinion Pine and Cedar timber and enter valley of the los Pinos, bear North.

80.00 Offset from tangent to Parallel to 250th mile corner.

Chains

Marked stone 5 x 5 x 4 250M. and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over
[fol. 497] same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone, 30 x 8 x 6, projecting 8 in. above mound, marked on the North C. South N. M. West 1868 East 250M.
From which point.
Point of bluff, bears N. 17 W.
Conical Peak bears S. 22 W.
Saddle Peak, bears N. 80 W.
Surface broken except valley, which is broken.
Soil in valley 2nd rate.
Balance 3d rate.

West on 251st Mile

Variation 14° 03′ East.

50.50 Dry bed of Creek, 40 lks. wide; rocky bottom, course S. S. E.

59.00 Enter valley, bears S. S. E.

75.80 Rio los Pinos 100 lks. wide, clear water, about 18 in. deep, rapid current, stony bottom; banks on East side high on West side low and stony. Course S. S. E.

79.40 Top of bluff on west side of river, bears S. S. E.

80.30 Offset from tangent to Parallel, to 251st mile corner. Marked a stone 8 x 6 x 4 251M and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 38 x 12 x 5, projecting 8 in. above mound, marked on the North C. South N. M. West 1868 East 251M.
From which point a
Conical mound, bears N. 72 W.
Snowy peak, bears N. 3 W.
Conical peak, on mountain, bears N. 7 E., 30 M. dist.
Conical peak, on mountain bears N. 17 E.
Conical peak, bears S. 32 E., 1 mile dist.
Surface rolling.
Soil 2nd rate.

West on 252nd Mile

Variation 14° 03′ East.

13.00 Leave sage brush prairie, bears South.

15.00 Enter scattering 2nd rate scrub, Pine and Cedar timber with thick undergrowth of sage, oak and other brush, bears South and ascend hill.

80.00 Offset from tangent to Parallel, to 252nd mile corner.

Chains

& Marked stone 12 x 6 x 4 252 M. and deposited it 3½ feet
[fol. 498] in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 26 x 8 x 7, projecting 8 in. above mound marked on the North C. South N. M. West 1868 East 252M.
No natural objects near.
Surface mountainous and stony, covered with a thick undergrowth of scrub Pine and Cedar brush. Soil 3d rate.
Oct. 11th. Measuring chain compared with standard and found correct.

West on 253d Mile

Variation 14° 03′ East.
80.00 Offset from tangent to Parallel, to 253d mile corner. Marked stone 10 x 6 x 3 253M. and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides C. N. M. 1868 253M. respectively.
From which point a
½ conical peak, bears N. 4 W., 25 miles dist.
Surface mountainous, covered with scrub Pine and Cedar timber.
Soil 3d rate.

West on 254th Mile

Variation 14° 03′ East.
59.00 Canon, 50 lks. wide, 800 feet deep, bears N. W.
80.00 Offset from tangent to Parallel to 254th mile corner. Marked stone 10 x 6 x 4 254M. and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 8, projecting 8 in. above mound, marked on the North, South, East and West sides C. N. M. 254M. 1868 respectively.
No natural objects near.
Surface mountainous covered with thick brush.
Soil 3d rate.

West on 255th Mile

Variation 14° 03′ East.
67.00 Perpendicular sand stone bluff, 70 feet high, bears N. W.
78.00 Enter valley, bears N. E.

Chains

80.00 Offset from tangent to Parallel to 255th mile corner.
[fol. 499] Marked stone 6 x 4 x 3 -255 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -255 M.- respectively.
No natural objects near.
Surface mountainous, covered with scrub, pinion Pine and Cedar brush.
Soil 3d rate.

West on 256th Mile

Variation 14° 03′ East.
77.50 Creek, 15 lks. wide, very little water, course S. S. W.
80.00 Offset from tangent to Parallel to 256th mile corner. Marked stone 4 x 3 x 2 -256 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet sqr., and 18 in. deep. Set sand stone 30 x 12 x 4, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -256 M.- respectively.
No natural objects near.
Surface rolling, mostly covered with sage brush.
Soil 3d rate.

West on 257th Mile

Variation 14° 03′ East.
2.00 Enter scrub Pine and Cedar timber and leave valley, bears S. W.
65.00 Creek, 10 lks. wide, very little water, high banks, gravelly bottom, course S. S. W.
80.00 Offset from tangent to Parallel, to 257th mile corner. Marked stone 8 x 6 x 4 -257 M.- and deposited it 3½ feet in earth. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 10 x 10 projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -257 M.-
No natural objects near.
Surface broken and stony covered with scrub cedar, pine and oak timber and sage brush.
Soil 3d rate.
[fol. 500] Oct. 12th. Measuring chain compared with standard and found correct.

West on 258th Mile

Chains

Variation 14° 03' East.

6.00 Top of sand stone bluff, bears South.

10.50 Creek, 20 lks. wide, very little water, high banks, gravelly bottom, course South.

16.00 Top of sand stone bluff, on West side of Creek, bears South.

80.00 Offset from tangent to Parallel to 258th mile corner. Marked stone 6 x 5 x 4 -258 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 12, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -258 M.- respectively.

No natural objects near.

Surface broken and stony, covered with scrub Pine and timber.

Soil 3d rate.

West on 259th Mile

Variation 14° 03' East.

1.00 Perpendicular sand stone bluff, 15 feet high, bears S. S. W.

3.00 Creek, 8 lks. wide, clear water, rapid current, sandy bottom, course E. S. E.

25.00 Leave valley, about 3 chs. wide, bears S. E. and East.

80.00 Offset from tangent to Parallel to 259th mile corner. A sand stone 6 x 5 x 4 feet, projecting 2 feet above ground, marked on the North, South, West and East sides -C.- -N. M.- -1868- -259 M.- and on top + respectively.

No mound, no pits and no natural objects near.

Surface broken.

Soil 2nd rate.

West on 260th Mile

Variation 14° 03' East.

80.00 Offset from tangent to Parallel to 260th mile corner. Marked stone 6 x 6 x 3 -260 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 10 x 5, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -260 M.- respectively.

No natural objects near.

Surface broken, covered with scrub pinion Pine and Cedar brush.

Soil 3d rate.

Chains

West on 261st Mile

Variation 14° 03′ East.

80.00 Offset from tangent to Parallel to 261st mile corner. Marked stone 8 x 6 x 4 -261 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -261 M.- respectively.
No natural objects near.
Surface broken, covered with pinion Pine and cedar timber.
Soil 3d rate.

West on 262nd Mile

Variation 14° 04′ East.

58.00 Valley, 1 chain wide, bears S. S. W.

80.00 Offset from tangent to Parallel to 262nd mile corner, which is identified by a sand stone 8 feet square, projecting 2 feet above earth, marked on the North, South, West and East sides -C.- -N. M.- -1868- -262 M.- respectively.
No mounds, No pits, No natural objects near.
Surface broken, covered with pinion Pine timber and brush.
Soil 3d rate.
Oct. 12th. Measuring chain compared with standard and found correct.

West on 263 Mile

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel, to 263d mile corner. Marked stone 8 x 6 x 3 -263 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 29 x 15 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -263 M.- respectively.
No natural objects near.
[fol. 502] Surface broken.
Soil 3d rate.

Chains

West on 264th Mile

Variation 14° 03′ East.

20.00 Top of high ridge and enter canon, bears N. N. E.

37.00 Leave canon, bears N. W.

80.00 Offset from tangent to Parallel, to 264th mile corner. Marked stone 6 x 4 x 4 -264 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 40 x 12 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -264 M.- respectively.

Soil 3d rate.

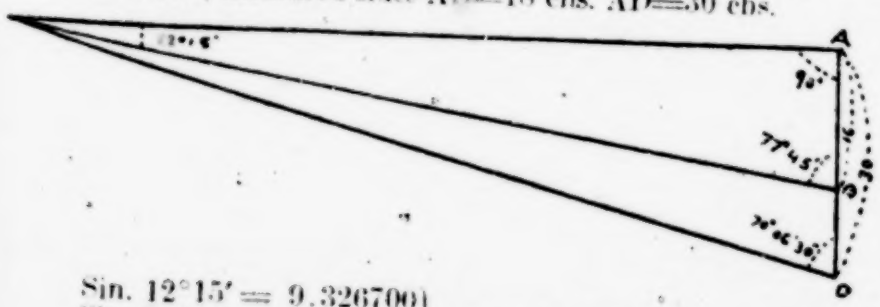
No natural objects near.

Surface mountainous, covered with pinion pine and Cedar brush.

West on 265th Mile

Variation 14° 03′ East.

65.66 To perpendicular bluff, 50 feet high, bears South. A deep canon, directly West. It being impossible to measure with chain on line, I set flag in valley on line and one on top of bluff, and from flag in valley, I found the triangle ABC and ADC, with measured angles A=90, B=77.45, D=70.06.30, measured sides AB=18 chs. AD=30 chs.



Sin. 12°15′ =	9.326700	Sin. 19°53′30″ =	9.531789
Sin. 77°45′ =	9.989997	Sin. 70°06′30″ =	9.973284
Log. 18 chs. =	1.255273	Log. 30 chs. =	1.477121
chs		Chs	
82.90 lks.	1.918570	82.91 lks.	1.918616
chs			

Mean 82.90½ lks.

Impossible to establish 265th mile corner on account of nearly perpendicular bluff.

Oct 13th Measuring chain compared with standard and found correct.

[fol. 503] West on 266th Mile

Chains

Variation 7½° 03' East.
In order to determine the Point, where the line crossed the Rio los Animas East from point A or 67.90 chs. West on 266th mile.

2.00 Indian trail bears South.

9.00 Enter low bottom, bears S. S. W.

16.90 Rio los Animas, 3 chs. wide, about 2½ feet deep, clear water, rapid current, about 6 miles per hour, stony bottom, banks on East side low, course S. S. E., general course South.

67.75 Offset from tangent 4.19 chs. to Parallel at Astronomical Monument No. 9 which is represented by a sand stone 2½x3 feet, projecting 3 feet above earth, marked on the North "Colorado" South "New Mexico" West "1868" East "37NL" and over top of stone there is a deep cross, cut with a chisel. Dug pits on the North, South, East and West sides.

From which
Conical Peak bears N 13½ E. about 1½ M dist.
Point of perpendicular sand stone bluff down Rio Los Animas, bears S. 7 E., 3 M. dist.
Animas valley bears S. 2 W.
Observation for Asimuth Oct. 15th A. M. on d Ursae

	h	m	s				
Minoris RA	18.	14.	49.8	DEC. 86°	36'	44"	and 51
	h	m	s				
Cephei RVA	6.	38.	19.3	Dec. 87°	14'	08".7.	Chro-

nometer fast at mean noon on Solar time h m s 45. 39 with a loosing rate of 16 per day.

Chron. time of Obs. 'n of d Ursae			
Minoris A. M. lower transit	10.	24.	32
Chron. time of Obs.'n of 51 Cephei.			
upper transit	10.	47.	49
Chronometer interval		23.	17
Chronometer rate			0.3
Reduction to Sidereal time			3.8
Sidereal interval		20.	21.1

Chains.

[fol. 504] Interval of time between upper and lower transit, —Computation— 23. 29.5
8.4

Δ=8. 4x15=126 Log.

Cos. d 86° 36′ 44″	= 2.10037	
Cos. d 87° 11′ 08″	= 8.77300	
Sec ϕ 37°	= 8.68366	Va. 14° 04′ East.
Cosec. 6° 09′	= 0.09765	
	= 0.96982	
Error of Asimuth 4″.2 East.	0.62450	

West from Astronomical monument No. 9 on 266th mile, which is 67.75 lks. West of place for 265th mile corner. Va. 14° 04′ East.

1.00 Bluff, bears North and South.

6.00 Top of bluff, bears South.

13.25 Offset from tangent to Parallel, to 266th mile corner. Marked stone 66 x 5 x 4 -266 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 8 x 4, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -266 M. respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

West on 267th Mile

Variation 14° 04′ East.

20.00 Foot of high ridge, bears South.

45.00 Top of ridge, bears S. S. E.

80.00 Offset from tangent to Parallel to 267th mile corner. Marked stone 6 x 4 x 4, and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug Pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 12 x 8, projecting 8 in. about mound, marked on the North -C.- South -N. M.- West -1868- East -267 M.-
No natural objects near.
Surface broken.
Soil 3d rate.

[fol. 505] West on 268th Mile

Chains

Variation 14° 04' East.

38.50 Dry bed of Creek, 20 lks. wide, sandy bottom, course N. N. W., A perpendicular sand stone rock, a little South of line, from underneath flows a spring of pure water, which sinks again in the sand.

49.00 Perpendicular sand stone bluff, bears South.

80.00 Offset from tangent to Parallel, to 268th mile corner. Marked stone 5 x 5 x 4 -268 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24 x 10 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -268 M.- respectively. No natural objects near.
Surface broken, covered with cedar and pine timber and oak brush.
Soil 3d rate.
Oct. 14th. Measuring chain compared with standard and found correct.

West on 269th Mile

Variation 14° 04' East.

11.00 Top of bluff 50 feet high and leave timber bears South.

20.00 Dry bed of Creek, 20 lks. wide, sandy bottom, course S. S. E.

48.00 Enter scrub Pine, timber, bears South.

80.00 Offset from tangent to Parallel to 269th mile corner. Marked stone 8 x 4 x 3 -269 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -269 M. respectively. No natural objects near.
Surface broken.
Soil 3d rate.

West on 270th Mile

Variation 14° 04' East.

30.50 Top of ridge bears South.
Conical Peak, bears N. 67. 16 W.
A. ½ conical peak bears N. 23 E.

80.00 Offset from tangent to Parallel to 270th mile corner. Marked stone 5 x 5 x 4 -270 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over

Chains

[fol. 506] same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 16 x 10, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -270 M.-
No natural objects near.
Surface broken, covered with scrub Pine and Cedar timber.
Soil 3d rate.

West on 271st Mile

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel to 271st mile corner. Marked stone 4 x 4 x 3 -271 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 6, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -271 M.- respectively.
No natural objects near.
Surface broken, covered with scrub pinion Pine and cedar timber and thick Oak and Sage Brush.
Soil 3d.

West on 272nd Mile

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel, to 272nd mile corner. Marked stone 4 x 4 x 3 -272 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 18 x 8 x 8, projecting 6 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -272 M.- respectfully.
No natural objects near.
Surface broken, covered with scrub pine and Cedar timber.
Soil 3d rate.

West on 273d Mile

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel, to 273d mile corner. Marked stone 5 x 4 x 4 -273 M.- and deposited it 3½ feet in earth, Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post 8

Chains

feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above bound, marked on the
[Fol. 507] North, South, West and East sides -C.- -N. M.- -1868- -273 M.- respectively.
No natural objects near.

West on 274th Mile

Variation 14° 04' East.

80.00 Offset from tangent to Parallel to 274th mile corner. Marked stone 5x4x3 -274 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -274 M.-
From which point
West peak of mountain bears N. 8 W.
Conical peak, bears N. 60 E.
Surface broken, covered with 3d rate, cedar and Pine timber.
Soil 2nd rate.
Oct. 15. Measuring chain compared with standard and found correct.

West on 275th Mile

Variation 14° 04' East.

39.00 Perpendicular sand stone bluff, about 20 feet high, bears S. S. E.

80.00 Offset from tangent to Parallel to 275th mile corner, which is represented by a cedar tree, 10 in. dia. barked square etc. marked on the North, South, West and East sides -C.- -N. M.- -1868- 275 M. respectively.
No natural objects near.
Surface broken, covered with scrub cedar and Pine timber.
Soil 3d rate.

West on 276th Mile

Variation 14° 04' East.

10.00 Leave Cedar and Pine timber and enter sage brush prairie, bears N. N. W.

80.00 Offset from tangent to Parallel to 276th mile corner. Deposited charred block 3½ feet in earth. Built conical

Chains

mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar 8 feet long and 6 in. square, [fol. 508] bevoled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C- South -N. M.- West -1868- East -276 M.-
No natural objects near.
Surface gently rolling Prairie.
Soil 3d rate.

West on 277th Mile

Variation 14° 04' East.
0.15 Indian trail, bears W. S. W.
10.00 Enter scattering 3d rate cedar and pine timber, bears W. N. W.
80.00 Offset from tangent to Parallel, to 277th mile corner. Deposited charred block 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Cedar post, 8 feet long and — in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -N. M.- West -1868- East -277 M.-
From which point a
Mountain Peak, bears N. 3° W.
Small Peak near Rio la Platte, bears N. 60 W.
Surface rolling.
Soil 2nd rate.

West on 278th Mile

Variation 14° 04' East.
30.00 Leave scattering 2nd rate Cedar and Pine timber and enter sage brush prairie, bears N. N. W. and S. E.
80.00 Offset from tangent to Parallel, to 278th mile corner. Marked stone 6x5x2 -278- M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x12x10, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -278 M.-
No natural objects near.
Surface broken.
Soil 2d rate.

Chains

West on 279th Mile

Variation 14° 04' East.

5.00 Top of ridge, bears S. W.

41.80 Large sand stone boulder on top of ridge 30 feet square [fol. 509] and 10 feet high

69.19 Indian trail, bears N. N. E.

80.00 Offset from tangent to Parallel to 279th mile corner. Marked stone 6x4x4 -279 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x8x8, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -279 M.-
No natural objects near.
Surface broken, mostly covered with scrub Pine and Cedar timber.
Soil 3d rate.

West on 280th Mile

Variation 14° 04' East.

12.00 Dry bed of Creek, 50 lks. wide, sandy bed, course W. S. W
Note: A bed of bituminous coal crops out on each side of Creek about 4 feet thick.

28.00 Top of sand stone bluff, 70 feet high, bears E. S. E.

35.00 Creek, 40 lks. wide (alkali) about ½ in. deep, sandy bottom, course S. S. E.

37.00 Leave valley, and ascend hill, bears S. E.

80.00 Offset from tangent to Parallel to 280th mile corner, which is identified by a large sand stone, 4 feet square and 18 in. high, marked on the North -C.- South -N. M.- West -1868- East -280 M.-
No natural objects near.
Surface broken, covered with scrub cedar and pine timber.
Soil 3d rate.

West on 281st Mile

Variation 14° 04' East.

2.00 Large beds of bituminous coal, from appearance it indicates a vein 30 feet thick, and coal is exposed over a space of about 80 acres.

50.00 Sand stone bluff about 200 feet high bears South.

55.00 Enter valley, bears South.

64.50 Dry bed of creek, 60 lks. wide, sandy bottom, high banks course S. S. E.

73.00 Dry bed of creek, 50 lks. wide, cut into valley about 10 feet, muddy bottom, course S. E.

Chains

80.00 Offset from tangent to Parallel to 281st mile corner.
[fol. 510] Marked stone 6x6x4 -281 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 24x12x6, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -281 M.-

From which point a
Point of sand stone bluff, bears N. 35 E.
Point of sand stone bluff, bears N. 30 E.
Mountains, bears N. 5 E.
Surface broken, on the hills nothing but gravel.
Soil 3d rate.
Oct. 16 Measuring chain compared with standard and found correct.

West on 282nd Mile

Variation 14° 04′ East.
80.00 Offset from tangent to Parallel to 282nd mile corner, on side of hill; which descends to the North. Marked stone 8x6x3 -282 M.- and deposited it 3½ feet in earth Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 34x14x12, projecting 8 in. above mound, marked on the North -C- South -N. M.- West -1868- East -282 M.-
No natural objects near.
Surface broken, covered with scrub Pine and Cedar timber.
Soil 3d rate.

West on 283d Mile

Variation 14° 04′ East.
40.00 Leave scattering Pine and Cedar timber and enter sage brush prairie, bears South.
71.24 Indian trail, bears S. S. W.
80.00 Offset from tangent to Parallel to 283d mile corner on top of ridge. Marked stone 5x5x4 -283 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x14x10, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -283 M.-
No natural objects near.
Surface rolling.
Soil 2nd rate.

[fol. 511] West on 284th Mile

Chains

Variation 14° 04′ East.
16.00 Enter valley, bears South.
19.50 Indian trail, bears South.
27.25 Rio la Platte, 50 lks. wide, clear water, 24 in. deep, rapid current, gravelly and rocky bottom, course South.
65.00 Indian trail, bears South.
66.00 Leave valley, bears South.
West Peak, Sierra la Platte, bears N. 8½ E.
Snowy Peak, bears N. 12.35 E.
Peak, bears N. 19¾ E.
½ conical peak, bears N. 35 E.
Canyon, where trail comes down bears N. 13½ E.
Rio la Platte valley, bears S. 16½ E.
80 60′ Offset from tangent to Parallel to 284th mile corner.
Marked stone 5x5x2 -284 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North -C- South -N. M.- West -1868- East -284 M.-
No natural objects near.
Surface gentle rolling.
Soil 2nd rate.

West on 285th Mile

Variation 14° 04′ East
10.00 Dry bed of Creek, 100 lks. wide, stony bottom, course S. E.
16.50 Leave valley, and enter scrub Pine and Cedar timber, bears S. E.
80.00 Offset from tangent to Parallel, to 285th mile corner.
Marked stone 8x6x4 -285 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x10x8, projecting 8 in. above mound, marked on the North -C- South -N. M.- West -1868- East -285 M.-
No natural objects near.
Surface broken, mostly covered with 3d rate Pine and Cedar timber and sand stone rock.
Soil 3d rate.

West on 286th Mile

Chains.

Variation 14° 04′ East.

60.00 Canon, bears S. E. Set flag on opposite side of canon, formed [fol. 512] the right angle triangle ABC measured the angles A = 90 B = 71.28 Side AB = 6 chs.

Sin. 17° 32′ = 9.478942
Sin. 71° 28′ = 9.979340
Log. 6 chs. = 0.778151
Distance 18 chs. 96 lks. 1.278549

78.96 Leave canon, bears S. E.

80.00 Offset from tangent to Parallel, to 286th mile corner, on point West of canon, 50 feet deep, on a flat sand stone, marked 286 M. Built conical mound of stone 4 feet high, over same. Set sand stone 30x12x10, projecting 8 in. above mound, marked on the North -C- South -N. M.- West -1868- East -286 M.-

No natural objects near.

Surface broken.

Soil 1st half sand stone rock.

2nd half 3d rate.

Oct. 17th. Measuring chain compared with standard and found correct.

West on 287th Mile

Variation 14° 04′ East.

30.00 Canon 600 feet deep, bears S. E. It being impossible to measure line with chain over canon, I set flag on west side of canon, thence North 3 chs. I formed the triangle ABC with the measured angles A = 90 B = 59.02. Side AB = 3 chs. hence we have the formula.

Sin. 18° 26′ = 9.499963
Sin. 71° 34′ = 9.977125
Log. 3 chs. = 0.477121
Distance 9 chs. 0.954283

Perpendicular sand stone bluff on each side.

39.00 Leave canon, bears S. E.

80.00 Offset from tangent to Parallel, to 287th mile corner. Marked stone 5x4x2 -287 M.- and deposited it 3½ feet in earth. Built conical mound of stone, 4 feet high over same. Dug pits 10 lks. East and West from base of

Chains

mound, 2 feet square and 18 in. deep. Set sand stone 20x10x10, projecting 6 in. above mound, marked on
{fol. 513} the North -C.- South -N. M.- West -1868- East -287 M.-
No natural objects near.
Surface broken.
Soil 3d rate.

West on 288th Mile

Variation 14° 04′ East.

29.00 Deep canon 200 feet deep, bears S. S. E.
It being impossible to measure with chain on line, I set flag on West side of canon, on line, thence North 2 chs. flag bears South.

Sin. 26° 34′ =	9.650539
Sin. 63° 26′ =	9.951539
Log. 2 chs. =	0.301030
4 chs.	0.602039

33.00 Leave canon, bears S. S. E.

40.00 Canon, 250 feet deep bears S. W.
It being impossible to measure with chain on line, I set flag on West side of canon, thence North 250 lks. flag bears S. 63° 26′ E.

Sin. 26° 34′ =	9.650539
Sin. 63° 26′ =	9.951539
Log. 250 lks. =	0.397940
5 chs.	0.698940

45.00 Leave canon, having nearly perpendicular sand stone sides, bears S. W.

80.00 Offset from tangent to Parallel, to 288th mile corner. Marked stone 5 x 4 x 2 -288 M.- and deposited it 3½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 8, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -288 M.-
No natural objects near.
Surface broken.
Soil 3d rate.

West on 289th Mile

Chains

Variation 14° 05′ East.

13.50 Canon 600 feet deep, nearly perpendicular sand stone sides, bears S. 3 E. It being impossible to measure distance over canon with chain, I run North, 4 chs. flag bears S 66° 02′ W.

[fol. 514] Sin. 23.58 ..... 9.608745
Sin. 66.02 ..... 9.960884
Log. 4 chs. 0.602060
9.00 chs. 0.954158

22.50 Leave canon, cars S. S. E.

58.00 Canon, bears S. S. E. It being impossible to measure distance across canon, on line. North 4 chs., flag bears S. 67.48 W.

Sin. 22° 12′ 9.577402
Sin. 67° 48′ 9.966550
Log. 4 chs. 0.602060
9.82 chs 6.991301

67.82 Leave canon, 400 feet deep, nearly perpendicular sand stone bluffs, bears S. S. E.

80.00 Offset from tangent to Parallel, to 289th mile corner. Marked stone 5 x 5 x 4, -289 M.- and deposited it 31½ feet in earth. Built conical mound of earth and stone, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 14 x 10, projecting 6 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -289 M.-. No natural objects near.
Surface broken.
Soil 3d rate.

West on 290th Mile

Variation 14° 05′ East.

35.00 Top of hill bears South. From which point
Hay stack peak, on canon, bears N. 17½ W
A slide on ridge, bears N. 4 W
Conical mountain peak, bears N. 53 W
It being impossible to measure the line with chain, on account of the deep impassible canons, I measure the angle from tangent to the conical mountain peak in the Sierra Latra, which gives an angle of 37° or bears N. 53 W. The tangent was commenced at Astronomical Monument No. 9

Chains

by turning a right angle from the Asimuth at that point, which is 2° M. 48 chs. 25 lks. East and the divergency of tangent from Parallel for that distance is 423 lks. South. I then went back to the Rio la Platte, followed it up for a distance of 10 miles; thence West to the Rio los Mancos, and

[fol. 515] down that river to the point where the stream leaves the deep canon, and then made observations for Latitude at Astronomical station near the Rio los Mancos, and found from computation, that that point was 184.92 chs. North of the 37th Parallel. I therefore measured S. 4° 58' W. 185 chs. 55 lks. to the Parallel, and established Astronomical Monument No. 10 which is represented by a sand stone boulder 20 feet wide, 10 feet thick and 10 feet above the surface, marked with a + cut with chisel on the top, where the line would cross the same, and on the North "Colorado" South "New Mexico" West "1868" East "37 N. L." Dug pits.

From which point a
Large sand stone boulder bears N. 29 W., 130 lks. dist. marked "Colorado" "1868."
Large sand stone boulder bears S. 29 E., 130 lks. dist. marked "New Mexico" "1868." 250 lks. foot of high sand stone bluff, 600 feet high, and from a point just West of Astronomical Monument. I took a prominent point on bluff, about 7 miles North, for approximate asimuth in order to detect any movement of the instrument, while making the following observations for asimuth at astronomical monument No. 10, Oct. 25th, 1868.

Chronometer fast at mean noon, on solar time
h m s s
5. 47. 54 with a loosing rate of 26 per day.

	h	m	s
Time of observations by Chronometer on 51 Cephei, upper transit	10.	10.	40.
Chro time of observations of d Ursae Minoris	10.	43.	57
Chronometer interval		23.	17
Chronometer rate			00.3
Reduction to Sidereal time			03.8
Sidereal interval		23.	21.1
Interval between upper and lower transit		23.	25.9
			48

	h	m	s			
d Ursae Minoris RA	18.	14.	33.1	Dec.	86°	36' 42" .2

Chalas

[fol. 516]

		h	m	s	
51 Cephei	RA	6.	38.	09	Dec. 87° 14′ 03″ .5
△4M.8 x 15=72	Log.	1.85733			
Cos d 86° 35′ 42″		8.77300			
Cos d 87° 14′ 03″		8.68366			Variation 14°07′ East.
Sec. φ 37°		0.09765			
Cosec. 6°09′		0.96982			
West of true asimuth	33	0.38146			

In order to determine the distance—this point which is 191 lks. West of Astronomical Monument No 19 to the point on tangent, 35 chs. West of the 289th mile corner, where the bearing was taken to the mountain peak in the Sierra Latra, I took the following bearing, and carefully measured the following distances. The same Peak bears N. 6.30 W. I measured West on tangent 420 chs. The above mentioned Peak bears N. 9° 14′ 30″ E., and at 500 chs. the Peak bears N. 12°09′20″ E.

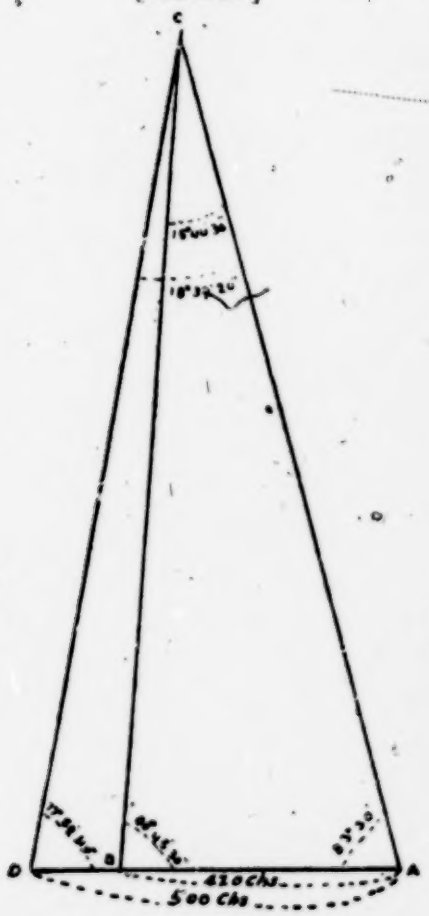
Therefore I have the following triangles ABC — ADC, with the common side AC, and the common measured angle A=83°30′, the measured angle B=80.45.30, D=77.50.20, side AB=420 chs., AD=500 chs. The following statements are made to find the common sides AC, as C is to B, so is AB to AC.

		Chs.	Lks.
Sin. 15°44′30″	9.4334505		
Sin. 80°45′30″	9.9943258		
Log. 420 chs.	2.6288587		
		15.47.87	3.1897340

		Chs.	Lks.
Sin. 18.39.20	9.5049846		
Sin. 77.50.40	9.9901521		
Log. 500.58 chs.	2.7046480		
		15.48.16	3.1898190

triangle ABC, side AC=1547 chs. 87 lks.; from triangle ADC, side AC=1548 chs. 16 lks. therefore the mean

[fol. 517]



Chatus

will be 1548 chs. 01 lks. = side AC. In order to compute the distance from the point at A we have to compute the distance, that the tangent commenced at, at the Astronomical Monument No. 9, would be South of the point A in the triangle, and we will assume the distance to be 47 miles and 30 chs. If the tangent had been extended west that distance it would have been South 1705 lks. and if the triangle, and we will assume angles from the point A in triangle a distance of 23 M. 62 chs. it would have been South of the Parallel 4.29 lks. therefore making the two tangents if started from the same point and extended the distance of 23 M 62 chs. a distance of 17 chs. 11 lks, apart, making a change of 38′ 08″ in course. Therefore if the course had been taken to the mountain Peak, assuming the same tangent that was used in the first bearings, the course would have been 6° 30′ — 30′ 08″ = 5°. 59′. 52″, or N. 5° 59′ 52″ W. and assuming the point S. 5° 59′ 52″ E. 17 chs. 20 lks. to the tangent, projecting from the Astronomical Monument No. 9, we have the triangle A B C the point B = 35 chs. on 290th mile. Point C a conical Peak in Sierra Latra Mountains that can be seen from nearly all points as it tapers to a small cone at the top Point A in San Juan valley. Measured angles B = 37°, A = 95°59′52″. Hence angle C = 47.00.08, Side AC = 1565 chs. 21 lks. I have the [fol. 518] angle B: C: AC: AB. hence we have the side AB = 19.02 chs. 19 lks. = 23 M. 62 chs. 19 lks. + 180 for the departure. West in a course N6W = 17 chs. 20 lks. from tangent to Parallel 23 M. 63 chs. 09 lks. - 190 lks. distance West of Astronomical Monument, makes a distance of 23 M. 62 chs. 09 lks. from the point 35 chs. West of the 289th mile corner, or 23 M. 62 chs. 09 lks. + 289 M. 35 chs. = 313 M. 17 chs. 09 lks. to Astronomical Monument No. 10 in San Juan valley. The country — the subject of this triangulation is very broken, cut up with deep canons, covered with scrub Pine and Cedar timber. The soil is coarse gravel, and no vegetation exists except cactus and soap weed.

Chains

Sin. 37° = ... 9.7794630
Sin. 47°00'08" = ... 9.8641432
Log. 15.65.21 = ... 3.1945737

1902.19 chs. = ... 3.2792539

West on 314th Mile

Variation 14° 07' East.
from Astronomical monument which is 17.08 lks. West of place for 313th mile corner.

62.92 Offset from tangent to Parallel to 314th mile corner. Marked stone 3 x 3 x 3 -314M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C- -NM- -1868- -314M- respectively.
No natural objects near.
Surface nearly level Prairie.
Soil 3d rate.

West on 315th Mile

Variation 14° East.

86.69 Offset from tangent to Parallel, to 315 mile corner. Marked stone 5 x 5 x 4 -315M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long, and 6 in. square, beveled at the top, 3 feet in [fol. 519] the ground projecting 12 in. above mound, marked on the North -C- South -NM- West -1868- East -315M-.
No natural objects near.
Surface gently rolling prairie
Soil 2nd rate.

West on 316th Mile

Chains

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel to 316th mile corner. Deposited charred block, 6 in. square, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post, 8 feet long and 6 in. square, beveled at the top, 3 feet in the ground, projecting 12 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -316 M.- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 2nd rate.

West on 317th Mile

Variation 14° 06′ East.

20.00 Indian trail bears North

80.00 Offset from tangent to Parallel to 317th mile corner. Marked sand stone 6x4x3 -317 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at top, 3 feet in ground, projecting 12 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -317 M.-.
No natural objects near
Surface gently rolling, Prairie.
Soil 3d rate.

West on 318th Mile

Variation 14° 06′ East.

80.00 Offset from tangent to Parallel to 318th mile corner. Marked stone 7x5x4 -318 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set charred Pine post 8 feet long and 6 in. square, beveled at the top, 3 feet in ground, projecting 12 in. above mound, marked on the North,
[fol. 520] South, West and East sides -C.- -N. M.- -1868- -318 M.- respectively.
No natural objects near.
Surface gently rolling prairie.
Soil 3d rate.

Chains

West on 319th Mile

Variation 14° 06' East.

74.00 Dry bed of Creek, 75 lks. wide, sandy and gravelly bottom, high banks, course W. N. W.

80.00 Offset from tangent to Parallel to 319th mile corner. Marked stone 8x6x3 -319 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set slate stone 36x16x4, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -319 M.-
No natural objects near.
Surface gently rolling.
Soil 3d rate.

West on 320th Mile

Variation 14° 06' East.

80.00 Offset from tangent to Parallel, to 320th mile corner. Marked stone 10x6x3 -320 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 28x14x6, projecting 8 in. above mound, marked on the North -C.- South -N. M.- West -1868- East -320 M.-
No natural objects near.
Surface broken.
Soil 3d rate.

West on 321st Mile

Variation 14° 06' East.

80.00 Offset from tangent to Parallel to 321st mile corner. Marked stone 5x5x4, -321 M.- and deposited it 31½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set sand stone 30x12x10, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -321 M.- respectively.
[fol. 521] No natural objects near.
Surface broken.
Soil 3d rate.

West on 322nd Mile

Chains

Variation 14° 06′ East.

12.00 I took the following bearings:
Mountains on West side of Rio Colorado bears N. 51 W.
West end of mountains bears N. 33 W.
Abutment, bears N. 59 E.
Perpendicular cliff, bears S. 75½ E.
Perpendicular cliff bears S. 72½ E.
Isolated body of rock and earth, having the appearance of a large Cathedral, bears S. 7 E.
Conical Peak, on East end of Tunichi mountains bears S. 10 W.
Conical Peak, on Tunichi mountains bears S. 13½ W.
Highest Point of mountain range, bears S. 52½ W.
Conical Peak on Sierra La Platte bears N. 37 E.

68.00 Dry bed of Creek, about 50 lks. wide, sandy bottom, course N. W.

76.00 Conical mound, about 40 feet high, on line.

80.00 Offset from tangent to Parallel to 322nd mile corner. Marked stone 6x4x3 -322 M.- and deposited it, 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug-pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x10x4, projecting 6 in. above mound, marked on the North, South, East and West sides -C.- -N. M.- -1868- -322 M.- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

West on 323d Mile

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel to 323d mile corner. Marked stone 16x6x3 -323 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x14x3, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -323 M.- respectively.

[fol. 522] No natural objects near.
Surface broken.
Soil 3d rate.

Chains

West on 324th Mile

Variation 14° 07′ East.

80.00 Offset from tangent to Parallel, to 324th mile corner. Marked stone 10x6x3 -324 M.- and deposited it 3½ feet in earth. Built conical found of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x10x1, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -324 M.- respectively.

No natural objects near.

Surface broken.

Soil 3d rate.

West on 325th Mile

Variation 14° 07′ East.

51.00 Enter valley of the Mancos, subject to overflow, bears S. W.

52.50 Rio los Mancos, 70 lks. wide, clear water, 2½ feet deep, gentle current, sand bottom, high banks, filled with beaver dams, course S. W.

57.50 Leave valley, high banks, bears South.

58.50 Top of bluff.

Ruins of an old stone house, about 150 lks. South.

80.00 Offset from tangent to Parallel to 325th mile corner. Marked stone 6x5x3, -325 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20x10x6, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -325 M.- respectively.

No natural objects near.

Surface broken.

Soil 3d rate.

West on 326th Mile

Variation 14° 44′ East.

80.00 Offset from tangent to Parallel, to 326th mile corner. Marked stone 8x4x3 -326 M.- and deposited it 3½ feet [fol. 523] in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30x14x10, projecting 8 in. above mound, marked on the

Chains

North, South, West and East sides of "N. M.-1868-326 M.-" respectively.
No natural objects near.
Surface gently rolling, prairie.
Soil 3d.—.

West on 327th Mile

Variation 14° 07' East.

25.80 Indian trail, bears South.

39.00 Canon, bears S. W. and South.

NOTE.—A Vein of bituminous coal crops out on each side from 6 to 10 feet in thickness.

47.00 Leave canon, 200 feet deep, bears South.

70.00 Canon, 300 feet deep, bears West.

80.00 Place for 327th mile corner in canon on south side of hill, and impossible to establish corner.
No natural objects near.
Surface broken.
Soil 3d rate.

West on 328th Mile

Variation 14° 07' East.

10.00 Leave canon, bears West and enter San Juan valley, bears W. N. W.

72.50 Rio San Juan, water little muddy, 3½ feet deep, rapid current, gravelly bottom, banks low, course North. Set flag on opposite bank of river thence North 200 lks. flag bears S. 66° 02' W. distance over river 4.50 chs.

77.00 Over same, high banks, 10 feet high, course North.

80.00 Offset from tangent to Parallel to 328th mile corner. Marked stone 10 x 6 x 3 "328 M.-" and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits, 10 lks. East and West, from base of mound, 2 feet square and 18 in. deep. Set sand stone 28 x 12 x 10, projecting 8 in. above mound, marked on the North, South, West and East sides "C.-N. M.-1868-328M.-" respectively.
No natural objects near.
Surface level.
Soil 2nd rate.

[fol. 524] West on 329th Mile

Chains

Variation 14° 04′ East.

80.00 Offset from tangent to Parallel to 329 mile corner. Marked stone 8 x 6 x 4 -329 M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 20 x 6 x 5, projecting 6 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -229M.- respectively.
Surface nearly level.
Soil 2nd rate.

West on 330th Mile

Variation 14° 07′ East.

2.50 Bend in the San Juan, course W. S. W., muddy water, 7 feet deep, rapid current, high banks.
Sand bar in river, but North of line.

12.40 Over bend in river, high banks course N. W.

50.00 Leave valley of San Juan, bears North.

80.00 Offset from tangent to Parallel to 330th mile corner. Marked stone 5 x 3 x 4 -330M.- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square, and 18 in. deep. Set sand stone 26 x 12 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -330M.- respectively.
No natural objects near.
Surface gently rolling, last 50 chs. broken.
Soil 2nd rate.

West on 331st Mile

Variation 14° 07′ East.

38.40 Dry bed of Creek, sandy bottom, course N. W.

50.00 Leave dry bed of Creek, low banks, course N. W. and West.

80.00 Offset from tangent to Parallel to 331st mile corner. Marked stone 8 x 6 x 4 -331 M- and deposited it 3½ feet in earth. Built conical mound of earth, 4 feet high, over same. Dug pits 10 lks. East and West from base of mound, 2 feet square and 18 in. deep. Set sand stone 30 x 14 x 8, projecting 8 in. above mound, marked on the North, South, West and East sides -C.- -N. M.- -1868- -331M.- respectively.
No natural objects near.
Surface broken.
Soil 3d rate.

Chains

[fol 525] West on 332nd Mile

Variation 14° 07' East.

60.00 To 109° of West Longitude from Greenwich, according to Astronomical observation and computations made for Longitude near the 37th Parallel of North Latitude, and the observations made for Latitude.

I established Astronomical Monument No. 11 at this point for the corner stone to the Territories of Colorado, New Mexico, Arizona and Utah.

Deposited a sand stone 12 x 10 x 8, 3 feet in earth, engraved with a chisel 109° WL—NM—C—A1868. Set a sand stone 5 feet 10 in. in length by 18 x 10 in. 2½ feet in earth, durably engraved with a chisel on the N. E. "Colorado" -331 M.- -60 chs.- on the S. E. "New Mexico" "37 N. L.," on the S. W. "Arizona" "1868," on the N. W. "Utah" "109 W. L."

Built a circular mound of cobble stone, 7 feet at base, 3 feet high. Dug 4 pits on the North, South, East and West sides, 6 feet from base, 2 feet square and 18 in. deep.

The monument is situated on the high land, near a ridge that can be seen for some distance from the East and about 1½ miles from the Rio San Juan.

Bearings

South point of ridge, bears N. 87° W.
North point of Ridge, bears N. 65 W.
Highest Peak on Sierra Latra bears N. 40½ E.
Lone column of rock on same range, bears N. 44 E.
Lone column of rock on same range, East of same bears N. 48½ E.

Point of Bluff, on East side of valley, bears N. 55 E., about 30 miles dist.
North point of high plateau bears N. 82 E.
South point of high plateau, bears S. 88½ E.
South point of high ridge, bears S. 78¾ E.
Conical peak in Sierra Latra bears S. 16½ W.
Conical Peak in Sierra Latra bears S. 23 W.

We hereby certify, that we assisted Ehud N. Darling, Surveyor and Astronomer, in surveying the North boundary of New Mexico, which is the 37 Parallel of North Latitude, between the 103° and the 109° of West Longitude from Greenwich. That said line (aforesaid) has been in all respects to the best of our knowledge and belief, well and

[fol. 526] faithfully surveyed, and the monuments planted according to the instructions furnished by the Commissioner of the Genl. Land Office.

(Signed) Jno. E. McManus, North A. Haight, Chainmen. Robert Darling, Samuel Meyers, Otto Mangold, Cornermen. John E. Jones, Joel B. Durnall, Flagmen.

Subscribed and sworn to before me, a Notary Public, for the County of Douglass, City of Lawrence, Kansas, this 4th December, 1868. (Signed) W. A. Simpson, Notary Public, Douglass, Kansas. (Seal.)

I, Ehud N. Darling, do solemnly swear, that in pursuance of a contract with the Hon. Jos. S. Wilson, Commissioner of the General Land Office of the U. S. in Washington, bearing date the 22nd day of May, 1868, and in strict conformity to the laws of the United States, and the instructions furnished by the said Commissioner, I have faithfully surveyed the 37th Parallel of North Latitude, so far as it constitutes the North boundary of New Mexico, from the 103° to 109° of West Longitude from Greenwich, and I do further solemnly swear, that the foregoing are the true and original field notes of such survey.

(Signed) Ehud N. Darling, U. S. Surveyor and Astronomer.

Subscribed by said Ehud N. Darling, U. S. Surveyor and Astronomer, and sworn to, before me, a Justice of the Peace for the city and county of Washington, this 13th day of April, 1869. (Signed) T. C. Connolly, J. P.

[fol. 527] Department of the Interior,

General Land Office

April 30, 1869.

The foregoing field notes of the survey of the Northern boundary of New Mexico on the 37th Parallel of North Latitude from the 103° to 109th° of Longitude west from Greenwich, executed by Ehud N. Darling, Astronomer and Surveyor, under his contract of May 22, 1868, having been examined, are hereby approved.

(Signed) Jos. S. Wilson, Commissioner.

U. S. Surveyor General's Office, Denver, Colorado

I hereby certify this to be a correct copy of the Original field notes on file in this office.

Witness my hand and seal this 6th day of February A. D. 1920.

John B. McGauran, Surveyor General for Colorado. (Official Seal.)

[fol. 528] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER FOR APPEARANCE—Filed May 13, 1920

The Clerk will enter my appearance as counsel for the defendant.
Victor E. Keyes, State House, Denver, Colo.

[fol. 529] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

MOTION FOR LEAVE TO FILE MOTION TO STRIKE OUT PARTS OF ANSWER—Filed Oct. 25, 1920

Now comes said complainant and moves the court for leave to file a motion to strike out parts of the answer of defendant, and argument in support of said motion, and submits said motion and argument herewith.

State of New Mexico, by O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 530] [File endorsement omitted.]

[fol. 531] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MINUTE ENTRY OF ORDER GRANTING LEAVE TO FILE REPLICATION TO ANSWER AND ANSWER TO CROSS-BILL & MOTION TO STRIKE OUT PARTS OF ANSWER, ETC.—October 25, 1920.

On motion of Mr. Frederick S. Tyler in behalf of counsel for the complainant, leave is granted to file replication to the answer of the defendant, to file answer to the cross-bill, and to file motion to strike out parts of answer of the defendant to the bill of complaint.

[fol. 532] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

[fol. 533] MOTION TO STRIKE OUT PARTS OF ANSWER—Filed Oct. 25, 1920

Now comes the said complainant and assuming that Rule 33 of the Rules of Practice for Courts of Equity, is applicable to this case, or at least indicates the practice which this court considers preferable, moves the court to strike out from defendant's answer so much of Subdivision III thereof as is as follows:

"but defendant avers that said Carpenter survey and his field notes of the said boundary line were never confirmed by the Congress of the United States, nor by either the State of Colorado, or the Territory or State of New Mexico, but that, on the contrary, an effort was made to confirm the said Carpenter survey in the first session of the 60th Congress, by the introduction in the Senate of Senate Joint Resolution No. 78, which passed the Senate and the House of Representatives, and was submitted to the President for his approval, and that the said Joint Resolution was on the 19th day of December, 1908, upon the advice of the Attorney General of the United States, disapproved by the President and returned to the Senate with his objections thereto, which Resolution, upon the same day, was laid upon the table by the Senate, and no further action has since been taken thereon by Congress, and the said Carpenter survey, and boundary line as shown by said field notes, failed to become effective in any respect and was never recognized by the General Land Office of the United States as the boundary line between Colorado and New Mexico. A copy of said veto message of the President is hereto attached and made a part hereof."

because the same is insufficient as a defense, or any part of a defense [fol. 534] to the allegations of the bill of complaint, and sets out matters which would be entirely irrelevant to any issue which can properly be raised in this case, and is therefore impertinent.

And complainant further moves the court to strike out of said answer all of Subdivision V thereof, except the two last paragraphs of that Subdivision, because the same is insufficient as a defense, or any part of a defense, to the allegations of the bill of complaint, and sets out matters which are entirely irrelevant to any issue which can properly be raised in this case, and is therefore impertinent.

O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[Title omitted]

In this case the bill of complainant sets out a line shown by what may be called the Carpenter survey, made by Howard B. Carpenter, under a contract with the United States, dated July 7, 1902, by which he was to re-survey, re-establish and re-mark the boundary line between Colorado and the Territories of New Mexico and Oklahoma, and avers that said line is the true and correct boundary line between Colorado and New Mexico and that Colorado has assumed jurisdiction, as is admitted by the answer, over country south of said line, but the answer denies that the Carpenter line is the true or correct boundary line between the two states although it fails to set up what is the true and correct boundary.

The answer as well as the bill of complaint shows that the 37th parallel of north latitude is properly the boundary line, and the Carpenter survey, according to the instructions given to Carpenter, which begin near the foot of page 3 of the printed bill of complaint, was, in effect, for the purpose of correctly establishing and marking that parallel on the earth's surface.

[fol. 535] Subdivision III of the answer, to a portion of which the motion to strike out is directed, after admitting that Carpenter did make a survey which was approved by the Commissioner of the General Land Office, proceeds as follows:

"but defendant avers that said Carpenter survey and his field notes of the said boundary line were never confirmed by the Congress of the United States, nor by either the State of Colorado, or the Territory or State of New Mexico, but that, on the contrary, an effort was made to confirm the said Carpenter survey in the first session of the 60th Congress, by the introduction in the Senate of Senate Joint Resolution No. 78, which passed the Senate and the House of Representatives, and was submitted to the President for his approval, and that the said Joint Resolution was on the 19th day of December, 1908, upon the advice of the Attorney General of the United States, disapproved by the President and returned to the Senate with objections thereto, which Resolution, upon the same day, was laid upon the table by the Senate, and no further action has since been taken thereon by Congress, and the said Carpenter survey, and boundary line as shown by said field notes, failed to become effective in any respect and was never recognized by the General Land Office of the United States as the boundary line between Colorado and New Mexico. A copy of said veto message of the President is hereto attached and made a part hereof."

The matter above quoted is attacked by the motion to strike out; and complainant submits to the court that it is of no importance whether the Carpenter survey was ever approved by Congress, the issue properly being whether the survey is correct or not, and no action by Congress could have made it correct if it really were not,

nor could any action, or non-action, by Congress have made it incorrect if it were really correct, because Congress was without power to settle the question of a state boundary, jurisdiction as to such a question being vested in this court alone, as is substantially shown in the veto message of President Roosevelt, which appears on page 6 of the printed answer, where it is set out that to establish the true boundary line, an appropriate method would be to invoke by appropriate proceedings the original jurisdiction of this court. The United States might have instituted proceedings to invoke that jurisdiction as is established by U. S. vs. Texas; 143 U. S. 621, but the [fol. 536] government did not do so, and New Mexico as a Territory could not do so, but, as a State it has now invoked the jurisdiction of this court.

Obviously it is equally unimportant that the Carpenter survey has not been recognized by the General Land Office as no action or non-action by that office could change the location of the 37th parallel of latitude on the earth's surface.

The allegation in the answer that the Carpenter survey "failed to become effective in any respect" is not an allegation of fact but a statement of a mere conclusion on the part of the pleader.

There is nothing in the matter quoted from Subdivision III of the answer which can have any effect upon the ascertainment by this court of where the said 37th parallel is upon the earth's surface which is the vital question to be herein determined.

The motion to strike out is also aimed at Subdivision V of answer, excepting the two last paragraphs thereof. The matter objected to is as follows:

"For further defense to said bill of complaint, this defendant avers that in the Act of Congress, approved March 3rd, 1875, to enable the People of Colorado to form a Constitution and State government, and be admitted into the Union, (18 Statutes at Large, 474), and also by the Constitution adopted by the vote of the People of Colorado, and under which the State of Colorado was admitted into the Union by Proclamation of President Grant, August 1st, 1876, the 37th parallel of North latitude between the 25th and 32nd meridians of longitude West from Washington, was fixed as the southern boundary line of that State; that pursuant to authority of an Act of Congress, approved March 2nd, 1867, (14 Statutes at Large, 466), Ehud N. Darling, United States Surveyor and Astronomer, by the most approved methods of the time, surveyed and established in the year 1868, the 37th parallel of North latitude so far as it constituted the boundary line between the Territories of Colorado and New Mexico, and marked the same upon the earth's surface by mile corners and monuments, a copy of which survey together with the field notes of his work is attached hereto and made a part hereof, which field notes of said survey were examined and approved on the 30th day of April, 1869, by the Honorable Joseph S. Wilson, Commissioner of the General Land Office, as appears by his certificate to that effect attached to said field notes.

[fol. 537]

Defendant avers that for more than thirty (30) years, the position of the said Darling line remained undisputed, and the correctness of its technical execution unquestioned, and as so established the said Darling line has been generally recognized and acquiesced in by both of the States herein involved, and accepted by the Federal government, and is now recognized and accepted by the Federal government as the true and subsisting boundary line between Colorado and New Mexico; and by reason of the right and title acquired as hereinbefore set forth, this defendant from the time said boundary was so established in 1868 to the present time, has held lawful and rightful possession of and exercised dominion and sovereignty, and now claims the same, over the territory down to the said southern boundary line as established by the said Darling, and no further; county lines have been formed, towns and settlements have grown up, school districts, voting precincts, land districts and water districts have been created with reference to said line, public officers have been elected, property has been assessed, taxes levied and collected under the authority of the State of Colorado and its courts of both civil and criminal jurisdiction have exercised unquestioned jurisdiction in all places North of said boundary line and the State of New Mexico has exercised like jurisdiction in all places South of said line. County maps, State maps and maps prepared by the Federal government have for more than forty years last past delimitated said boundary according to said Darling survey, and government post offices have been established as being in Colorado when above said line, and in New Mexico when below said line, and public land surveys on both sides of said line were closed thereon, lands have been disposed of, rights acquired and political boundaries in both Colorado and New Mexico fixed by reference to said line.

The 37th parallel of North latitude, as established by Howard B. Carpenter, passes through several towns lying wholly within the State of Colorado, according to the boundary as originally surveyed by Darling, and along the entire line there is a material, and in many places, excessive variance between the lines of the two sur- [fol. 538] veys, and the effect of said Carpenter survey if declared the true boundary line would be to remove a considerable strip of territory which is now within the State of Colorado, according to the Darling survey, and place it in the State of New Mexico.

The stone monument established by Capt. Macomb U. S. A. of the Topographical Bureau in 1858, under direction of the War Department, marking the intersection of the 37th parallel of North Latitude with 103 degrees of West Longitude from Greenwich, adopted as the initial point of the Darling Survey, was designated as the northwest corner of Indian Territory, now State of Oklahoma, in 1874 by John J. Major, U. S. Surveyor and Astronomer, in the survey and marking of the boundary between Indian Territory and Colorado Territory. The line attempted to be established by said Carpenter passed 93 lks. south of said Macomb monument and departed from the boundary lines established by both Darling and Major, and said Carpenter obliterated the marks upon said Macomb monument, theretofore and since hitherto recognized as the corner upon the

south line of Colorado and common to the States of New Mexico and Oklahoma, and attempted to relocate said common corner at a point about two miles easterly from said long established and accepted Macomb monument.

The said Carpenter survey consisted of a new fixation of the 37th parallel of North latitude independent of the line established by Darling in 1868, and not only failed of confirmation by Congress, but the Federal government up to the present time has declined to recognize the said Carpenter survey as the true boundary line between the said two states, and on the contrary has accepted and still accepts the said Darling survey as the true and correct boundary line between said two states."

It will be seen that while the answer sets up the making of a survey of the line in 1868 by a person named Darling, which was approved by the Commissioner of the General Land Office in 1869, yet it does not anywhere allege that the Darling survey was correct, although there is an averment of its correctness in defendant's cross-bill. The averment that the position of the Darling line for more than 30 years remained undisputed and the correctness of its technical execution unquestioned and that it has been generally recognized by both states and accepted by the federal government as [fol. 539] the true boundary line between Colorado and New Mexico, and the allegations as to exercise of sovereignty in accordance therewith by Colorado and New Mexico, and as to county, state and United States maps, post offices and public land surveys, set out no facts which are worthy of consideration by this court in arriving at a conclusion as to where the 37th parallel is on the earth's surface. The court will take notice of the fact that New Mexico did not come into existence as a state until January 6, 1912.

The averment that the 37th parallel of north latitude was fixed as the southern boundary of the state of Colorado, cat. not raise any issue in this case as the bill of complaint alleges, in substance, the same thing, and the answer in Subdivision II thereof substantially admits this allegation of the bill to be correct. This averment in the answer is clearly superfluous and subject to the objection stated in the motion to strike out.

The allegations as to the effect of declaring the Carpenter survey to be the true boundary line, sets out matter which is of no value to this court in its effort to ascertain whether that survey correctly locates the 37th parallel; and the allegations as to the Macomb monument, the obliteration by Carpenter of marks thereon, and its distance of 93 links from the Carpenter line, are equally valueless to the court in the present case and add nothing of substance to what is contained in the bill of complaint as will appear by reference to page 344 of the printed bill.

The object of the motion to strike out is not in any way to embarrass defendant in the presentation of its defense, but only to get rid of immaterial and irrelevant matters, and to avoid the presentation of testimony as to such matters which would unnecessarily en-

cumber the record and could have no effect except to confuse and delay.

The case presented by bill, answer and cross-bill, when stripped of the extraneous matters, is this:—Complainant relies upon the Carpenter survey as showing the true boundary line; defendant denies this, and appears to rely upon the Darling survey as showing the true line. The object of the parties is, or ought to be, to ascertain by the judgment of the court, which is correct.

O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 540] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

MOTION FOR LEAVE TO FILE REPLICATION TO ANSWER, &c.—Filed Oct. 25, 1920

Now comes said complainant and moves the court for leave to file a replication to the answer of defendant and answer to the cross-bill of complaint of defendant, and submits said replication and answer herewith.

State of New Mexico, by O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 541] [File endorsement omitted.]

[fol. 542] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

NOTICE OF SUBMISSION OF MOTION FOR LEAVE TO FILE REPLICATION, &c.—Filed Oct. 25, 1920

To Honorable Victor E. Keyes, Attorney General of Colorado, Denver, Colorado:

You are hereby notified that the plaintiff in the above entitled cause will, at the convening of the supreme court in Washington on the first Monday in October, 1920, said Monday being the 4th day of October, 1920, submit to the court a motion for leave to file a replication to the answer of defendant and an answer to the cross-bill of complaint of defendant, a copy of said motion, replication and answer being enclosed herewith; and will also at the same time and place submit to the court a motion for leave to file a motion to strike out parts of the answer of defendant with argument in support of said motion a copy of said motions and argument being also enclosed herewith.

O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 543] State of New Mexico
County of Santa Fe

Frank W. Clancy, being duly sworn, on his oath says that he has on this 24th day of August, 1920, deposited in the mail at Santa Fe, New Mexico, a duplicate of the foregoing notice, together with the inclosures mentioned in the said notice addressed to Victor E. Keyes, Attorney General of Colorado, Denver Colorado, duly postpaid.

Frank W. Clancy.

Subscribed and sworn to before me, a Notary Public in and for the state and county aforesaid, this 24th day of August, 1920. John J. Kenney, Notary Public. My commission expires 6/13/24. (Seal of John J. Kenney, Notary Public, Senate Fe County, N. M.)

[fol. 544] [File endorsement omitted.]

[fol. 545] In the Supreme Court of the United States

[Title omitted]

Replication to the Answer of Defendant—Filed Oct. 25, 1920

The said complainant, saving and reserving to itself all and all manner of advantage of exception to the manifold insufficiencies of the answer of said defendant, for replication thereto, says that it does and will aver and proye its said bill of complaint to be true, certain and sufficient in the law to be answered unto by the said defendant, and that the answer of the said defendant is uncertain, untrue and insufficient to be replied unto by this complainant; without this, that any other matter or thing whatsoever in the said answer contained, material or effectual in the law to be replied unto, confessed and avoided, traversed or denied, is true, all of which matters and things this complainant is and will be ready to aver and prove as this Honorable Court shall direct, and *and* humbly prays, as in and by its said bill it has already prayed.

The State of New Mexico, by O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 546] [File endorsement omitted.]

[fol. 547] In the Supreme Court of the United States

[Title omitted]

Answer to the Cross-Bill of the Defendant—Filed Oct. 25, 1920

The said complainant, the State of New Mexico, hereby waives the issuance and service of any process to require it to appear and answer the allegations in said cross-bill of complaint contained: and now,

and at all times hereafter, saving and reserving to itself all and all manner of benefit and advantage of exception to the many errors, uncertainties and imperfections in the said cross-bill of complaint contained, for answer thereunto, or unto so much thereof as it is advised it is material or necessary for it to answer, answering says:

That it denies that the true boundary line between plaintiff and defendant is described in the answer of the defendant except as far as that answer states that it is the 37th parallel of north latitude, and denies that the true boundary line between plaintiff and defendant is fully or correctly shown or delineated in the field notes of survey made in 1868 by Ehud N. Darling, attached to and made a part of said cross-bill as well as a part of said answer of defendant.

[fol. 548] And this complainant denies that any other matter or thing in the defendant's cross-bill of complaint contained, material or necessary for this complainant to make answer unto and not herein and hereby well and sufficiently answered, confessed and avoided, traversed or denied, is true to the knowledge or belief of this complainant: all of which matters and things this complainant is ready and willing to aver, maintain and prove as this Honorable Court shall direct, and humbly prays that said cross-bill of complaint be dismissed and that this complainant go hence without day, with its reasonable costs and charges in this behalf most wrongfully sustained.

The State of New Mexico, by O. A. Larrazolo, Frank W. Clancy, Counsel for Complainant.

[fol. 549] [File endorsement omitted.]

[fol. 550] SUPREME COURT OF THE UNITED STATES

[Title omitted]

NOTICE OF MOTION TO STRIKE, &c.—Filed May 24, 1921

May 23, 1921.

The Hon. Victor E. Keyes, Attorney General for State of Colo., New Willard Hotel, Washington, D. C.

DEAR SIR: You are hereby notified that the Complainant in the above entitled cause will, on the 23rd day of July, 1921, or as soon thereafter as the said Court may be in session, submit to the said Court its motion to strike out parts of the answer which has been on file in the Clerk's office for many months, and copies of which, together with the argument in support thereof, were served on you something in the year 1920.

Yours very truly, Frank W. Clancy, Special Counsel for Complainant. FWC:MK.

[fol. 551] [Title omitted]

DISTRICT OF COLUMBIA,
City of Washington

Frank W. Clancy, being duly sworn, on his oath, says that he is counsel for the Complainant in the above entitled cause, and that the notice hereto attached of intention to submit to the Court the motion of Complainant to strike out parts of the answer in said cause, addressed to the Hon. Victor E. Keyes, at the New Willard Hotel, Washington, D. C., has been mailed by him on this 23rd day of May, 1921, having been informed by said Attorney General on this day that the said Attorney General is stopping at the New Willard Hotel, in Washington.

Frank W. Clancy.

Subscribed and sworn to before me this 23rd day of May, 1921. C. D. Ratcliffe, Notary Public. (Seal of Charles D. Ratcliffe, Notary Public, District of Columbia.)

[fol. 552] SUPREME COURT OF THE UNITED STATES

[Title omitted]

May 23, 1921.

The Hon. Victor E. Keyes, New Willard Hotel, Washington, D. C.

DEAR SIR: I inclose herewith notice of intention to submit motion to strike out parts of your answer in the case of the State of New Mexico vs. State of Colorado, now pending in the Supreme Court of the United States.

Yours truly, Frank W. Clancy, Special Counsel for New Mexico. FWC:MK.

[fol. 553] [File endorsement omitted.]

[fol. 554] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MOTION TO SET MOTION TO STRIKE FOR HEARING—Filed July 25, 1921

Now comes the State of Colorado, the above named defendant, and moves the Court to set down for hearing and oral argument, upon a

day certain and convenient to the Court, the complainant's motion to strike out certain parts of the defendant's answer.

The State of Colorado, by Victor E. Keyes, Attorney General, Solicitor and of Counsel for the State of Colorado. Charles Roach, Deputy Attorney General; William R. Ramsey, Assistant Attorney General, Solicitors and of Counsel for the State of Colorado.

Post Office Address: Denver, Colorado.

[fol. 555] [Title omitted]

NOTICE

To the State of New Mexico, complainant herein, and to Honorable Frank W. Clancy, special counsel for said Complainant:

You will please take notice that the defendant in the above-entitled cause will, on Saturday the 23rd day of July, A. D. 1921, or as soon thereafter as the said court shall be in session and counsel can be heard, move the court to set down for hearing and oral argument the complainant's motion to strike out certain parts of the defendant's answer. A copy of defendant's said motion is annexed hereto.

The State of Colorado, by Victor E. Keyes, Attorney General for the State of Colorado; Charles Roach, Deputy Attorney General; William R. Ramsey, Assistant Attorney General, Solicitors and of Counsel for said Defendant.

[fol. 556] Santa Fe, New Mexico.

Service of the foregoing notice, by the receipt of a copy thereof, together with a copy of the motion mentioned therein, is hereby acknowledged this twenty-fifth day of July, A. D. 1921.

Frank W. Clancy.

[fol. 557] [File endorsement omitted.]

[fol. 558] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MINUTE ENTRY OF SUBMISSION OF MOTION TO STRIKE—October 4, 1921

The motion to strike out parts of the answer was submitted by Mr. Jay Turley in behalf of Mr. Frank W. Clancy for the complainant.

[fol. 559] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MOTION TO SET MOTION TO STRIKE FOR HEARING—Filed Oct. 4, 1921

Now comes the State of Colorado, the above-named defendant, and moves the court to set down for hearing and oral argument, upon a day certain and convenient to the court, the complainant's motion to strike out certain parts of the defendant's answer.

The State of Colorado, by Victor E. Keyes, Attorney General, Solicitor and of Counsel for the State of Colorado; Charles Roach, Deputy Attorney General; William R. Ramsey, Assistant Attorney General, Solicitors and of Counsel for the State of Colorado.

Post Office Address: Denver, Colorado.

[fol. 560] [Title omitted]

NOTICE

To the State of New Mexico, complainant herein, and to Honorable Frank W. Clancy, special counsel for said Complainant:

You will please take notice that the defendant in the above-entitled cause will, on Saturday, the 23d day of July, A. D. 1921, or as soon thereafter as the said court shall be in session and counsel can be heard, move the court to set down for hearing and oral argument the complainant's motion to strike out certain parts of the defendant's answer. A copy of defendant's said motion is annexed hereto.

The State of Colorado, by Victor E. Keyes, Attorney General for the State of Colorado. Charles Roach, Deputy Attorney General; William R. Ramsey, Assistant Attorney General, Solicitors and of Counsel for said Defendant.

[fol. 561] Santa Fe, New Mexico.

Service of the foregoing notice, by the receipt of a copy thereof, together with a copy of the motion mentioned therein, is hereby acknowledged this twenty-fifth day of July, A. D. 1921.

Frank W. Clancy.

[File endorsement omitted.]

[fol. 562] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MINUTE ENTRY OF SUBMISSION OF MOTION FOR LEAVE TO MAKE ORAL ARGUMENT ON MOTION TO STRIKE OUT—October 4, 1921

The motion for leave to make oral argument on complainant's motion to strike out parts of the answer was submitted by Mr. Victor E. Keyes for the defendant.

SUPREME COURT OF THE UNITED STATES

[Title omitted]

MINUTE ENTRY OF ORDER GRANTING LEAVE TO COUNSEL FOR COMPLAINANT TO FILE ADDITIONAL BRIEF—October 4, 1921

Leave was granted counsel for the complainant to file additional brief within 60 days on motion of Mr. Jay Turley for complainant.

[fol. 563] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER FOR APPEARANCE—Filed October 5, 1921

The Clerk will enter my appearance as Counsel for the complainant.

Jay Turley, 945 Munsey Bldg., Washington, D. C.

[fol. 564] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER DENYING MOTION TO STRIKE PARTS OF ANSWER—Filed Oct. 10, 1921

On consideration of the motion to strike out parts of the answer, It is now here ordered by this court that the said motion be, and the same is hereby, denied, without prejudice to its being presented when the case is reached on the merits.

per Mr. Chief Justice Taft, October 10, 1921.

[fol. 565] [File endorsement omitted.]

[fol. 566] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER FOR APPEARANCE—Filed January 11, 1922

The Clerk will enter my appearance as Counsel for the defendant
Delph E. Carpenter, Greely, Colo.

[fol. 567] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MINUTE ENTRY OF SUBMISSION OF MOTION FOR LEAVE TO FILE STIPULATION, ETC.—January 17, 1922

The motion for leave to file stipulation as to taking testimony herein was submitted by Mr. William R. Ramsey in that behalf.

[fol. 568] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

STIPULATION AS TO TAKING TESTIMONY AND SUGGESTION FOR ORDER THEREON—Filed Jan. 17, 1922

It is hereby stipulated and agreed by and between the complainant and defendant in the above entitled cause, by their respective attorneys, subject to the approval and order of the Court, that proofs shall be taken in said cause by an examiner or examiners to be named and designated in writing by agreement of said parties, each of whom shall have authority to administer oaths to witnesses, and before entering upon the discharge of his duties shall take and subscribe an oath that he will faithfully and impartially discharge and perform all duties devolving on him as such examiner according to the best of his ability and understanding, to be filed with the clerk of this Court together with the naming and designation of such examiner by said parties, and that such examiner or examiners shall, with all convenient speed, proceed to take all proofs which may be offered by said parties at such times and places as may be agreed on by said parties, or as may be designated by either of said parties upon ten days' notice to the opposing party; and shall reduce the same to writing and shall note all objections to questions or answers, or to the admissibility of any evidence offered, which may be made by either of said parties, provided, that any such ex-
[fol. 569] aminer shall be a competent stenographer and typist and that his compensation shall be fifteen cents per folio of one hundred

works of the original of the testimony and five cents per folio for each carbon copy thereof which he may, by either of said parties be called upon to furnish, such compensation to be paid by the party for whom the testimony is taken, or to whom such carbon copy or copies may be furnished; and provided further that such examiner shall not copy into his record any documentary evidence which may be offered, but he shall identify the same by appropriate markings as exhibits to be returned to this Court with his original record of the testimony taken, as a part thereof, which shall be a complete record of all proofs taken or offered, and of all proceedings in connection therewith, to the correctness of which he shall certify and file the same with the clerk of this Court.

It is further agreed that any matter appearing in the published statutes of Colorado, New Mexico, or of the United States, or in any congressional document, or other published governmental record pertaining to the issues herein shall be received as evidence without any further or other authentication than the publication thereof, subject, however, to any objections as to admissibility, on any ground as to competency, materiality, or relevancy other than authentication.

This January 16, A. D. 1922.

Frank W. Clancy, Counsel for Complainant. Victor E. Keyes, Attorney General of Colorado and counsel for Defendant, by William R. Ramsey, Assistant Attorney General of Colorado and Counsel for Defendant.

[fol. 570] [Title omitted]

ORDER

Upon reading the stipulation of said parties now submitted to the Court, after consideration by the Court, it is now ordered that the same may be filed, and, in pursuance thereof, that proofs shall be taken in this cause by an examiner or examiners, to be named and designated in writing by agreement of said parties, each of whom shall have authority to administer oaths to witnesses, and, before entering upon the discharge of his duties, shall take and subscribe an oath that he will faithfully and impartially discharge and perform all duties devolving upon him as such examiner, according to the best of his ability and understanding, to be filed with the clerk of this Court together with the naming and designation of such examiner by said parties, and that such examiner or examiners, shall with all convenient speed, proceed to take all proofs which may be offered by said parties at such times and places as may be agreed on by said parties, or as may be designated by either of said parties upon ten days' notice to the opposing party, and shall reduce the same to writing, and shall note all objections to questions or answers or to the admissibility of any evidence offered, which may be made by either [fol. 571] of said parties, provided that any such examiner shall be a competent stenographer and typist, and that his compensation shall

be fifteen cents per folio of one hundred words of the original of the testimony, and five cents per folio for each carbon copy thereof he may, by either of said parties, be called upon to furnish, such compensation to be paid by the party for whom the testimony is taken, or to whom such carbon copy or copies may be furnished; and provided further that such examiner shall not copy into his record any documentary evidence which may be offered, but he shall identify the same by appropriate markings as exhibits to be returned to this Court with his original record of the testimony taken, as a part thereof, which shall be a complete record of all proofs taken or offered, and of all proceedings in connection therewith, to the correctness of which he shall certify and file the same with the clerk of this Court; and it is further ordered that any matter appearing in the published statutes of Colorado, New Mexico, or of the United States, or in any Congressional document, or other published governmental record, pertaining to the issues herein, shall be received as evidence without any further or other authentication than the publication thereof, subject, however, to any objection as to admissibility on any ground as to competency, materiality, or relevancy, other than authentication.

[fol. 572] [File endorsement omitted.]

[fol. 573] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER GRANTING MOTION FOR LEAVE TO FILE STIPULATION—Filed Jan. 30, 1922

On consideration of the motion for leave to file a stipulation as to taking testimony herein,

It is now here ordered by this court that the said motion be, and the same is hereby, granted; and, in pursuance thereof, that proofs shall be taken in this cause by an examiner or examiners designated in writing by agreement of said parties, to be approved by the Court, each of whom shall have authority to administer oaths to witnesses, and, before entering upon the discharge of his duties, shall take and subscribe an oath that he will faithfully and impartially discharge and perform all duties devolving upon him as such examiner, according to the best of his ability and understanding, to be filed with the clerk of this Court together with the naming and designation of such examiner by said parties, and that such examiner or examiners, shall with all convenient speed, proceed to take all proofs which may be offered by said parties at such times and places as may be agreed on by said parties, or as may be designated by either of said parties upon ten days' notice to the opposing party, and shall reduce the same to writing, and shall note all objections to questions or answers or to the admissibility of any evidence offered, which may be made by either of said parties, provided that any such examiner shall be a competent

stenographer and typist, and that his compensation shall be fifteen cents per folio of one hundred words of the original of the testimony, [fol. 574] and five cents per folio for each carbon copy thereof he may, by either of said parties, be called upon to furnish, such compensation to be paid by the party for whom the testimony is taken or to whom such carbon copy or copies may be furnished; and provided furtner that such examiner shall not copy into his record any documentary evidence which may be offered, but he shall identify the same by appropriate markings as exhibits to be returned to this Court with his original record of the testimony taken, as a part thereof, which shall be a complete record of all proofs taken or offered, and of all proceedings in connection therewith, to the correctness of which he shall certify and file the same with the clerk of this Court; and it is further ordered that any matter appearing in the published statutes of Colorado, New Mexico, or of the United States, or in any Congressional document, or other published governmental record, pertaining to the issues herein, shall be received as evidence without any further or other authentication than the publication thereof, subject, however, to any objections as to admissibility on any ground as to competency, materiality, or relevancy, other than authentication.

Per Mr. Chief Justice Taft, January 30, 1922.

[fol. 575] [File endorsement omitted.]

[fol. 576] SUPREME COURT OF THE UNITED STATES

[Title omitted]

STIPULATION DESIGNATING EXAMINERS—Filed Apr. 27, 1922

In pursuance of the order of the court, made on January 30, 1922, the parties to the above entitled cause, hereby agree, subject to the approval of the court as provided in said order, to designate and to hereby designate the following named persons as examiners to take proofs in said cause as provided in the said order of the court, at the several places mentioned in connection with said names: Henry C. Luther, of Denver Colorado; Douglas O. Morgan, of Washington, D. C.; Ethel E. Stevenson, of Santa Fe, New Mexico.

Frank W. Clancy, Counsel for Complainant. Victor E. Keyes, Attorney General of Colorado, for Defendant.

[fol. 577] [File endorsement omitted.]

[fol. 578] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER APPROVING STIPULATION DESIGNATING EXAMINERS—Filed May 15, 1922

On motion of Mr. Edward T. Taylor in behalf of counsel for the defendant, it is now here ordered that the designation of Henry C. Luther of Denver, Colorado, Douglas O. Morgan, of Washington,

D. C., and Ethel F. Stevenson, of Santa Fe, New Mexico, as examiners to take testimony in this cause pursuant to the stipulation filed herein on April 27, 1922, be, and the same is hereby approved.

May 15, 1922.

[File endorsement omitted.]

[fol. 579] SUPREME COURT OF THE UNITED STATES

[Title omitted]

OATH OF ETHEL F. STEVENSON AS EXAMINER—Filed June 16, 1922

STATE OF NEW MEXICO,
County of Santa Fe:

I, the undersigned, Ethel F. Stevenson, of Santa Fe, New Mexico, having been designated by agreement in writing of the parties to the above entitled cause, as one of the examiners to take proofs in said cause in accordance with the order of the court made and entered on January 30, 1922, do hereby solemnly swear that I will faithfully and impartially discharge and perform all duties devolving upon me as such examiner, according to the best of my ability and understanding.

Ethel F. Stevenson.

Subscribed and sworn to before me this 12 day of June, 1922. Gail M. Osborn, Notary Public. My commission expires 3-5-25. (Seal.)

[fol. 580] [File endorsement omitted.]

[fols. 581-583] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

OATH OF EXAMINER—Filed Sept. 11, 1922

STATE OF COLORADO,
City and County of Denver, ss:

I, the undersigned, Henry C. Luther, having been designated in writing by agreement of the said parties as examiner to take proofs in the city and county of Denver in said cause, do hereby solemnly swear that I will faithfully and impartially discharge and perform the duties devolving upon me as such examiner according to the best of my ability and understanding.

Henry C. Luther

Sworn to before me and subscribed in my presence by the said Henry C. Luther, this 17th day of July, A. D., 1922. Russell K. Allen, Notary Public. My commission expires March 1, 1923. Russell K. Allen, Notary Public, City & County of Denver, Colo.

[fol. 584] [File endorsement omitted.]

[fol. 585] IN THE SUPREME COURT OF THE UNITED STATES

[Title omitted]

OATH OF DOUGLAS O. MORGAN AS EXAMINER—Filed Sept. 14, 1922

CITY OF WASHINGTON,
District of Columbia, ss:

I, the undersigned, Douglas O. Morgan, having been designated in writing, in accordance with the order of the Court, by agreement of the parties to the above-entitled cause as an examiner to take testimony in said cause at Washington, D. C.

Do hereby solemnly swear that I will faithfully and impartially discharge and perform all duties devolving upon me as such examiner, according to the best of my ability and understanding.

Douglas O. Morgan.

Sworn to and subscribed before me this 3d day of July, 1922. David W. Gall, Notary Public in and for the District of Columbia. David W. Gall, Notary Public, District of Columbia.

[fol. 586] [File indorsement omitted.]

[fol. 587] SUPREME COURT OF THE UNITED STATES

[Title omitted]

MOTION FOR LEAVE TO FILE AMENDED ANSWER, &C.

Now comes the defendant, the State of Colorado, and moves for leave to file its amended answer and amended cross-bill to the bill of complaint of the complainant, the State of New Mexico.

The State of Colorado, by Wayne C. Williams, Its Attorney General. Charles Roach, Deputy Attorney General. Oliver Dean, Assistant Attorney General. Delph E. Carpenter, of Counsel for the State of Colorado.